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ERRATUM

V.B. **25**, abst. 4. A line of print was unfortunately omitted. From line 11 the abstract should read:—

Bound coagulase is antigenically distinct from free coagulase. It is released during autolysis and it can be used to produce specific antibodies in rabbits.

The Executive Council of the Commonwealth Agricultural Bureaux is a signatory to the Fair Copying Declaration details of which can be obtained from the Royal Society, Burlington House, London, W.1.

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.

COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 25] April, 1955 [No. 4

DISEASES CAUSED BY BACTERIA AND FUNGI

KLATT, C.-H. (1954). Koagulasförsök med citratplasma från människa och olika husdjur vid mastitstafylokock diagnostiseringen. [**The value of plasma of various species in diagnostic coagulase tests of mastitis staphylococci.**] — *Nord. VetMed.* **6,** 303-310. [In Swedish. English and German summaries.] **861**

The use of plasma from human beings or from rabbits yields the best results in the coagulase test. Plasma from horses and pigs yields less satisfactory results, while plasma from cattle is unreliable. A constant correlation was observed between the result of the coagulase test and mannitol fermentation.

—I. MARTINI.

OEDING, P. (1953). **Serological typing of staphylococci. II. Investigations on the serological, chemical and physical properties of the antigen. III. Further investigations and comparison to phage typing.** — *Acta path. microbiol. scand.* **33,** 312-323; 324-336. [In English.] **862**

Three of the nine antigens which the author had demonstrated in previous work [*V.B.* **24,** 6] contained both a thermo-stable, trypsin-stable factor and a thermo-labile trypsin-labile factor. O-inagglutinability was common and was abolished at 120°C. or over. The author classified the strains examined by him into three serological groups which corresponded to Groups I, II & III described by Cowan [*V.B.* **11,** p. 346].—A. SEAMAN.

KLASTRUP, O. (1954). Et fast medium til bestemmelse af bovine yver-staphylococcers evne til at koagulere plasma. [**A solid medium for use in the coagulase test for mastitis staphylococci.**]—*Nord. VetMed.* **6,** 173-186. [In Danish. English and German summaries.] **863**

An account of the technique of a coagulase test for mastitis staphylococci, using solid medium.—I. MARTINI.

SKADHAUGE, K. (1954). **The streptococci of group L (Fry) and group N (Ernst). A contribution to the study of biochemical and serological properties.** — *Nord. VetMed.* **6,** 281-297. [In English. Danish and German summaries.] **864**

S. studied the biochemical and serological properties of 79 strains of beta-haemolytic streptococci, primarily classified as Lancefield Group L or Group N. He confirmed the work of Hauge [*V.B.* **21,** 1913], who observed that the two groups were identical. The group antigen was resistant to autoclaving at 127°C. for 2 hours, thus enabling group determination to be made by agglutination, in the same way as for Lancefield Groups A, C, and G. He demonstrated the presence of trypsin-stable and trypsin-labile antigens. In two strains there was an antigenic type-factor, apparently identical with the M substance found by Maxted (1949) to occur in Groups A, B, C, and G. Nearly all the strains examined by S. fermented starch. All the strains produced haemolysin when grown in fluid media.—R.M.

SAWYER, W. D., SMITH, M. R. & WOOD, W. B., JR. (1954). **The mechanisms by which macrophages phagocyte encapsulated bacteria in the absence of antibody.**—*J. exp. Med.* **100,** 417-424. [Authors' summary modified.] **865**

Macrophages from experimentally produced inflammatory exudates were capable of ingesting fully encapsulated *Str. pneumoniae* Type I and Group A Friedländer bacilli in the absence of antibody. The principal mechanism involved was that of surface phagocytosis; the majority of *Str. pneumoniae* ingested by macrophages in antibody-free preparations were ultimately destroyed. The authors discussed the relationship of these phenomena to the mechanism of recovery in infections with these organisms.

PEGREFFI, G., QUESADA, A. & CONTINI, A. (1954). Prove di emoagglutinazione nel carbonchio ematico. [**The haemagglutination test in anthrax.**]—*Bol. Soc. ital. Biol. sper.* **30,** 384-387. **866**

Virulent anthrax bacilli appear to contain a thermolabile fraction, capable of agglutinating fowl erythrocytes. Only living bacilli contain this fraction and the addition of specific antiserum can inhibit the test.—I. MARTINI.

SMITH, H., KEPPIE, J., ROSS, J. M. & STANLEY, J. L. (1954). **Observations on the cause of death in experimental anthrax.**—*Lancet.* **267,** 474-476. **867**

An account of experiments which demonstrated that secondary shock is a major factor in the death of g. pigs infected with *B. anthracis*. The authors recorded observations on the loss of alkaline phosphatase from the infected kidney, and demonstrated a connexion between a specific lethal factor in the plasma and the protective antigen of *B. anthracis*. [See also *V.B.* **24,** 973, 974, 975 & 3973.]—W. R. BETT.

LLOYD, R. S. (1952). **Occurrence of anthrax bacilli in the carpet-wool industry in the United States.**—*Arch. industr. Hyg.* **6,** 421-434. **868**

During the past ten years more than 90% of the cases of industrial anthrax in the U.S.A. occurred in persons associated with the carpet wool industry. The authors recovered anthrax bacilli from a high proportion of wool samples from certain countries. They made recommendations concerning dust suppression and general hygiene in the wool factories.—R.M.

TUNKL, B. (1954). Rezultati cijepljenja s bedreničnom vakcinom za sve životinje u 1952 godini. [**Immunization against anthrax in 1952 in Yugoslavia.**]—*Vet. Glasn.* **8,** 537-542. [In Croat. Abst. from English summary.] **869**

In Yugoslavia 386,000 farm animals (horses, cattle, sheep, pigs) were inoculated in 1952 with vaccines prepared from the avirulent strain of *B. anthracis* described by Sterne [*V.B.* **18,** 7]. Severe reactions were recorded in 0·01% of animals vaccinated. The proportion of animals which were considered to have died as a result of vaccination was 0·004%. Nineteen animals died from anthrax during the first four months after vaccination.—R.M.

JACOTOT, H. & VIRAT, B. (1954). La longévité des spores de *B. anthracis*. (Premier vaccin de pasteur.) [**Long duration of viability of spores of *Bacillus anthracis*.**]—*Ann. Inst. Pasteur.* **87,** 215-217. **870**

Of 100 samples of Pasteur's anthrax vaccine, preserved in broth between 1884 and 1900, four still contained viable spores in 1954. Three of the four samples were fully virulent, while the fourth had lost its infectivity for the g. pig, and killed only 4 out of 6 mice into which it was injected.—A.S.

STÄHELIN, H. (1954). Über osmotisches Verhalten und Fusion nackter Protoplasten von *Bac. anthracis*. [**Osmotic behaviour and fusion of protoplasts of *B. anthracis*.**]—*Schweiz. Z. allg. Path.* **17,** 296-310. [English and French summaries. English summary modified.] **871**

An account of a qualitative study of osmotic changes in an attenuated strain of *B. anthracis* using a technique which permitted the examination of isolated bacterial cells under various conditions. The action of sucrose and sodium chloride on the gymnoplasts in the bacilli, *i.e.*, round, naked protoplasts originating from the bacillary cells, was studied. S. discussed the expansibility of the cytoplasmic surface. Naked bacillary protoplasts from different cells were found to unite to form a single spherical body.

ALLAN, H. B. (1953). **Tuberculin testing in relation to the National Dairy Herd.** — *J. R. sanit. Inst.* **73,** 385-390. Discussion pp. 391-392. **872**

An account of the history of the Tuberculosis Attested Herds Scheme of Great Britain, its progress and the difficulties that are to be expected before complete eradication can be attained.—E. A. HIRSCH.

VERNE, S. T., DELPLACE, Y. & CAVIGNEAUX, A. (1952). Tuberculose bovine d'inoculation: maladie professionelle ou accident du travail? [**Legal aspects of TB. of bovine origin in man from handling diseased carcasses and skins.**]—*Ann. Méd. lég.* **32,** 304-311. **873**

The authors presented a clinical report on tuberculous lesions of the hands caused by bovine type tubercle bacilli in 8 persons employed in Paris abattoirs. They discussed legal aspects.—C. A. VAN DORSSEN.

MANTOVANI, A. (1954). Su di un caso di tubercolosi ovina da un ceppo umano. [**TB. in a sheep caused by human type tubercle bacilli.**]—*Riv. Med. vet., Parma.* **6,** 65-68. [English, French and German summaries.] **874**

TB. lesions in the lungs and regional lymph nodes of a sheep were associated with human type tubercle bacilli. The sheep lived under poor hygienic conditions in the same building as a man with pulmonary TB.—R.M.

SOFRENOVIĆ, D. & TRBIĆ, B. (1954). **[Infection of fowls with human type tubercle bacilli.]**—*Acta vet., Belgrade.* **4,** 43-52. [In Serbian. Abst. from German summary.] **875**

Infection with human type tubercle bacilli was established in one out of thirteen fowls given culture of the organisms by mouth, with or without oesophageal scarification, and in 4 out of 6 fowls previously sensitized by the repeated subcutaneous injection of killed organisms.—R.M.

I. JESPERSEN, A. (1954). **Immunity to tuberculosis in red mice** (*Clethrionomys g. glareolus* **Schreb).** — *Acta path. microbiol. scand.* **34,** 87-96. [In English.] **876**

II. JESPERSEN, A. (1954). **Use of red mice** (*Clethrionomys g. glareolus* **Schreb) for estimation of the ability of vaccines to immunize against tuberculosis.**—*Ibid.* 157-160. [In English.] **877**

I. The bank vole ("red mouse") *C. glareolus* has not previously been used as an experimental animal. J. inoculated 26 bank voles s/c with virulent human type tubercle bacilli. After 2 months these animals, together with 26 controls, were inoculated i/p with virulent bovine type tubercle bacilli. He compared the course of TB. in the two groups over a period of 8 months. Multiplication of the tubercle bacilli was strongly inhibited in the previously inoculated group; they died 132–263 days after the second inoculation while the controls died after 53–116 days.

II. J. compared the immunizing effect of B.C.G. vaccine, in the fresh state and after storage for 41 days at 2°, 20°, or 30°C., on bank voles. Storage at 2°C. did not reduce the potency of the vaccine, but the voles inoculated with vaccine stored at 20°C. or 30°C. were not protected from infection by virulent tubercle bacilli.—R.M.

ANON. (1954). **Tuberculosis from pets.**—*Brit. med. J.* Oct. 2nd, 822. **878**

Children who have been in contact with cats with proven pulmonary TB. should be treated as if they were contacts of a human case. A Mantoux test should be done.

—W. R. BETT.

HAWIRKO, R. Z. & MURRAY, E. G. D. (1954). **Oil partition for the collection of small numbers of tubercle bacilli from aqueous suspensions.** — *Canad. J. publ. Hlth.* **45,** 208-215. [Authors' summary modified.] **879**

The authors studied the spontaneous oil partition of acid-fast bacilli in water-oil systems to develop a more precise method of laboratory diagnosis. The type of oil, hydrogen ion concentration, and amount of oil had little effect on passage into oil of tubercle bacilli from an aqueous system. The degree of partition varied according to the number of bacilli in the suspension. If 5% sodium phosphate soln. was used as the suspending medium greater numbers of bacilli were taken up into the oil. G. pigs injected with oil from suspensions containing minimal numbers of bacilli developed extensive TB. The combined use of acetone and petroleum ether which was necessary to bring the oil into a suitable soln. for filtration proved somewhat bactericidal to the tubercle bacilli. Coconut oil, caster oil, cotton-seed oil, and soya bean oil exerted the least bactericidal activity of the oils tested. The addition of cephalin to olive oil appeared to minimize the toxic activity.

MANKIEWICZ, E. (1954). *Mycobacterium tuberculosis* **and** *Candida albicans*: **a study of growth-promoting factors.**—*Canad. J. Microbiol.* **1,** 85-89. **880**

A strain of *C. albicans* was isolated from pulmonary moniliasis which proved pathogenic for g. pigs. This strain produced a factor which enhanced the growth of tubercle bacilli. Its effect was also noted on tubercle bacilli from patients treated with antibiotics or chemotherapeutic substances.

C. albicans was found to grow poorly or not at all on Loewenstein's medium. If the products of tubercle bacilli were added growth was promoted. On this was devised a method for the earlier detection of *M. tuberculosis*. The medium was inoculated with the pathological material then superinoculated with *C. albicans*. Colonies of the latter trace the presence of *M. tuberculosis*, thus making use of the mutual dependence of the two micro-organisms.

—CHAS. A. MITCHELL.

CROWE, M. O'L. & WALKER, A. (1954). **Fluorescence and absorption spectral data for pterin isolated from the tubercle bacillus by chromatographic analysis.**—*Brit. J. exp. Path.* **35,** 18-27. **881**

Xanthopterin was produced by a virulent human strain of *Mycobact. tuberculosis*. [Abstractor's note—Xanthopterin is of importance in regulating division of normal and neoplastic cells. Morgan (*V.B.* **22,** 3402) reported that it inhibited the growth of psittacosis virus.]—A. B. PATERSON.

ARONSON, J. D., TAYLOR, H. C. & MCGETTIGAN, M. T. (1954). **The comparison of some tuberculins in BCG-vaccinated and unvaccin-**

ated persons.—*Amer. Rev. Tuberc.* **70,** 71-90. [French and Spanish summaries.] **882**

In unvaccinated individuals different commercial samples of O.T. were found to differ, freeze-dried O.T. to be of reduced, and Weybridge P.P.D. to be of slightly greater potency than the equipotent P.P.D.-S. [the international standard P.P.D. tuberculin] and R.T.22. P.P.D. tablets prepared by different manufacturers varied in reactivity, while the relative potencies of O.T. and P.P.D. appeared to depend upon the particular sample of O.T. selected. Intracutaneous tests with O.T. or P.P.D. revealed more reactors than the patch test in both vaccinated and unvaccinated groups.

Among B.C.G. vaccinated persons, O.T. was more reactive than P.P.D.-S, but similar to R.T.22 and Weybridge P.P.D., differences between the two tuberculin types being most marked in the vaccinated of one to four years' duration. While avian type P.P.D. and O.T. showed a comparable percentage of reactors in the vaccinated, *M. balnei* P.P.D. appeared less reactive than O.T. in both groups.

—A. B. Paterson.

Ebina, T., Ito, T., Yakuwa, E., Ito, K., Takase, Y., Ebina, A. & Umeta, Y. (1954). **Recent studies on freeze-dried vaccine.**—*Acta tuberc. scand.* **29,** 279-321. [In English. Abst. from authors' summary.] **883**

Young culture should be used for the preparation of freeze-dried B.C.G. vaccine: cultures 7–11 days old have the best survival rate. In making the suspension grinding should be avoided as much as possible as it damages the organisms extensively. Very low temperatures are unnecessary for the initial freezing; $-10°$ or $-12°$C. is sufficient: The greatest decrease in the number of living organisms occurs at this time, especially at the highest state of sublimation.

The moisture content of dried B.C.G. preserved in ampoules sealed *in vacuo* was estimated at between 3·2 and 0·3%. Of batches of B.C.G. vaccine prepared using 1, 5, 10, 15 and 30% solutions of various sugars as adjuvant, that prepared with 5% sugar soln. had the highest moisture content, following freeze-drying. The survival rate of the organisms after freeze-drying was slightly higher with the high concentrations of sugar (15–30%) than with the lower ones; this difference was more marked in batches of vaccine that had not been preserved in sealed ampoules. In groups of g. pigs vaccinated respectively with 10 mg. and 50 mg. of wet vaccine and with the same dosages of dried vaccine, allergy to tuberculin was weaker in the latter groups soon after vaccination, but was comparable to that in the former groups when tested 9–11 weeks after vaccination.

The initial multiplication of the B.C.G. organisms in the tissues of g. pigs is more vigorous with wet vaccine, but with the dried vaccine the later multiplication is more vigorous.

The catalase and dehydrogenase activities of the dried vaccine are proportional to its viable units. The tuberculin conversion rate [from a negative to a positive reaction] is also proportional to the catalase activity of the dried vaccine 1–3 months after vaccination. The authors compared the tuberculin conversion (using 0·05 mg. O.T.) following vaccination with 0·12, 0·8 and 0·04 mg. dried vaccine and with 0·04 mg. wet vaccine. With the dried vaccine at the two higher dosages the tuberculin reaction remained positive until 21 months after vaccination, but with both types of vaccine at a dosage of 0·04 mg. the reaction decreased after 12 months. Dried B.C.G. vaccine is suitable also for percutaneous application.

Hesselberg, I. (1952). **Investigations on the effect of ultrasonics on bacteria.**—*Acta path. microbiol. scand.* Suppl. No. 93. pp. 389-397. Discussion: pp. 397-399. [In English.] **884**

By use of ultrasonic waves of great intensity a method may be found to produce B.C.G. vaccines of suitable fine suspension. The destructive effect of ultrasonic waves is most likely due to a pure temperature reaction. By using special water jackets and the interpolation of suitable pauses the temperature can be prevented from rising more than 2°C.

—E. A. Hirsch.

Kirchheimer, W. E. & Whittaker, C. K. (1954). **Asparaginase of mycobacteria.**—*Amer. Rev. Tuberc.* **70,** 920-921. **885**

Washed cells of the human strains of *M. tuberculosis* H 37 Rv and Ra, B.C.G., Strain 607, and *M. smegmatis* formed ammonia from asparagine without oxygen uptake and also under anaerobic conditions. Cell-free extracts of *M. smegmatis* were prepared possessing asparaginase activity. The enzyme was absent from *M. phlei,* which also grew poorly on synthetic medium containing asparagine as sole source of nitrogen.—A. B. Paterson.

Linell, F. & Nordén, A. (1954). *Mycobacterium balnei.* **A new acid-fast bacillus occurring in swimming pools and capable of producing skin lesions in humans.**—*Acta tuberc.*

scand. Suppl. No. 33. pp. 84. [In English. Abst. from authors' summary.] **886**

The authors described an acid-fast organism isolated from swimming pools and from skin lesions in human beings. It was pathogenic for mice, though the results of certain tests had indicated that it belonged to the so-called "saprophytic" group. They stated that the taxonomy of acid-fast organisms other than the tubercle bacillus is not yet such as to permit true classification, but it was suggested that the organism should be named *M. balnei.*

Cross-sensitivity tests in lab. animals and in human beings appeared to indicate some antigenic relationship with the tubercle bacillus.

TIMPE, A. & RUNYON, E. H. (1954). **The relationship of "atypical" acid-fast bacteria to human disease. A preliminary report.** — *J. Lab. clin. Med.* **44,** 202-209. [Authors' summary modified.] **887**

Acid-fast organisms differing from human or bovine type tubercle bacilli were isolated from 88 human beings. Some appeared to be intimately associated with pulmonary disease in man, but none were pathogenic for g. pigs. The authors divided the organisms into three groups on the basis of their cultural characteristics. Two of the groups were pathogenic for mice and the other group was not. Organisms pathogenic for mice occurred for long periods in sputum of human beings not infected with TB., and most of them caused lung lesions in mice. Most of the organisms non-pathogenic for mice were isolated from gastric washings from human beings, some of whom were infected with TB. The authors considered that any organism isolated from a human being with disease of the lungs should not be ignored if it failed to have the cultural or pathogenic properties of *M. tuberculosis.*

BERG, J. W. (1953). **The dual nature of acid-fastness.**—*Yale J. Biol. Med.* **26,** 215-223. **888**

Two types of acid-fastness can be recognized: (1) intact tubercle bacilli, which do not stain with aqueous dyes, but only in the presence of alcohol and phenol and are resistant to differentiation in hydrochloric acid-alcohol; (2) crushed tubercle bacilli, lepra bacilli, spermatozoa and mycolic acids, which stain with aqueous dyes and are acid-fast after differentiation in acetic acid-alcohol, but not after hydrochloric acid-alcohol. The first type is structural acid-fastness; the second type is changed only when the chemical composition of the cell is changed. —W. R. BETT.

TAMMEMAGI, L. (1953). **Tuberculosis-like lesions in the submaxillary lymph nodes of pigs in Queensland.** — *Qd. J. agric. Sci.* **10,** 81-107. **889**

Seventy-five normal, and 65 diseased submaxillary lymph nodes were examined.

Of the diseased nodes classified as pseudotuberculous, *Corynebacterium equi* was recovered from 95%. Tubercle bacilli were found in only 2·6%. No evidence was obtained that any of the other miscellaneous bacteria isolated, nor migrating parasitic larvae, were responsible for the lesions. The corynebacterial lesions were spherical or oval in shape, encapsulated and readily enucleated.

Lesions due to tubercle bacilli were not readily enucleated. Calcification was observed consistently in those due to *C. equi.* Histologically there was close resemblance between the lesions caused by the two organisms. Giant and epithelioid cells were frequently seen in *C. equi* lesions.

Of the 15 nodes in the series which had been classified by meat inspectors as tuberculous, bovine type tubercle bacilli were isolated form 8 and *C. equi* from 9, both organisms being coexistent in some of them.

Twelve nodes were examined which exhibited mottling. This was thought to be due to healing after local infections.

C. equi was recovered from 22 of the normal nodes examined. Eosinophilic infiltrations were common to these and diseased nodes.

Previous reports of partial acid-fastness of *C. equi* were confirmed.—K. G. JOHNSTON.

MIR CHAMSY, H., NAZARI, F. & SADEGH, A. (1954). II. A. Contribution à l'étude du traitement de la morve expérimentale du cobaye par divers antibiotiques. B. Evolution du bacille morveux vers la résistance aux sulfamides. **[Treatment of glanders in g. pigs with antibiotics and sulphonamides.]**—*Arch. Inst. Hessarek.* No. 8, pp. 50-54. **890**

Pfeifferella mallei is sensitive *in vitro* to aureomycin, chloramphenicol and terramycin, but seven daily oral doses of 500 mg./kg. had no effect on the infection in g. pigs.

A sulphonamide-resistant strain in g. pigs resisted treatment with sulphadiazine but was sensitive to "tetrasulphamide" (a mixture of four sulphonamides).—A. SEAMAN.

LE GAC, P., COURMES, E. & BRES, B. (1954). Note préliminaire à l'étude des colonies muqueuses du bacille de Whitmore. **[The mucoid phase of *Pfeifferella whitmori.*]**—*Bull. Soc. Path. exot.* **47,** 41-43. **891**

The authors described the primary isola-

tion of mucoid strains of *Pf. whitmori* which dissociate on subculture. They gave an account of the appearance and details of a few of the biochemical reactions.—A. SEAMAN.

ANON. (1954). **Vaccination against swine erysipelas.**—*Timely Topics. Univ. Ill.* 2 pp. **892**

The percentage incidence of *E. rhusiopathiae* infection over 5 years was 11·62 in unvaccinated herds and 1·02 in herds vaccinated with desiccated culture and simultaneously injected with antiserum. Culture vaccination plus antiserum gave some protection to unweaned and newly-weaned piglets whilst piglets born to gilts that had been vaccinated when mature, were immune for 6 weeks. *E. rhusiopathiae* killed-culture vaccine seems less effective than the living vaccine.—A. ACKROYD.

DELPY, L.-P. & HARS, E. (1953). Observations sur le mode d'action des vaccins tués. Vaccin solubilisé immunigène contre le rouget du porc. [**The mode of action of killed vaccines in swine erysipelas.**]—*Bull. Acad. vét. Fr.* **26,** 539-546. **893**

The authors stated that a vaccine prepared from killed *E. rhusiopathiae* and containing the substance of approx. ten thousand millions of the organisms per ml., with the addition of one part per thousand of saponin and one part per five thousand of thiomersal [details of technique of preparation not given] had very good immunogenic properties and could be freeze-dried. It gave satisfactory results in lab. tests with mice, and also in field trials with pigs using a single dose of 2 ml.—J.D.

SAXER, E. (1954). Einige Beobachtungen über Zwischenfälle bei der Schutzimpfung mit Rotlaufadsorbatvakzine. [**Complications resulting from the inoculation of pigs with swine erysipelas adsorbate vaccine.**] — *Schweiz. Arch. Tierheilk.* **96,** 151-154. **894**

Of 596 healthy pigs inoculated with killed *E. rhusiopathiae* adsorbate vaccine 26 became ill and 11 died from septicaemic *E. rhusiopathiae* infection. As the vaccine contains no live organisms S. suggested that the inoculation may have lowered the animals' resistance against the saprophytic forms of *E. rhusiopathiae* present in the body.—W. G. SILLER.

AMANZHULOV, S. A. (1953). [**Abortion in goats due to *Erysipelothrix* (*Listeria*) *monocytogenes* infection, infection of kids and treatment with "sulphantrol".**]—*Veterinariya, Moscow.* **30,** No. 8, pp. 22-23. [In Russian.] **895**

Mass abortions of goats were observed in spring and *E. monocytogenes* was isolated from the stomachs of foetuses. Later an illness was observed in kids which, in its final stages, was an encephalomyelitis. The organism was also isolated from the organs of these kids. If "sulphantrol" was given i/v before the c.n.s. was effected, the animals recovered. When the herd was brought to an open pasture with clear running water, where blood-sucking insects were absent, no further cases of abortion or illness occurred. Some cases of abortion due to *E. monocytogenes* also occurred in sheep and cows.—A. MAYR-HARTING.

DONKER-VOET, J. (1954). Serologische onderzoekingen van enkele in Nederland geïsoleerde *Listeria monocytogenes*-stammen. [**Serological examination of some strains of *Erysipelothrix* (*Listeria*) *monocytogenes* isolated in the Netherlands.**] — *Tijdschr. Diergeneesk.* **79,** 743-765. [English, French and German summaries.] **896**

Of 24 strains of *E. monocytogenes* isolated from animals and from human beings in Holland, 13 fell in Type 1, Paterson (antigenic structure: I, II, (III)AB) and 11 into Type IV (structure (III)V, ABC). The former included one from a cow, 3 from cattle foetuses, 2 from pigs, one from a silver fox, 4 from fowls and 2 from human beings; the latter included 2 from cattle, one from a bovine foetus, one from a sheep, 3 from pigs, 2 from fowls, one from a canary and one from a human being.

—C. A. VAN DORSSEN.

TOIDZE, A. I. (1954). [**Infectious mastitis in goats in the Gruzin Republic.**] — *Veterinariya, Moscow.* **31,** No. 7. pp. 24-29. [In Russian.] **897**

Since 1936 an extremely severe infectious mastitis has been observed in lactating goats in the Gruzin Republic, U.S.S.R. After a short incubation period the goats become ill with an acute purulent mastitis, gangrene and death frequently occurring. An organism of the genus *Pseudomonas* has been isolated regularly from the blood, udder and other organs of affected goats; it is agglutinated by the sera of infected animals in a dilution of 1:100, and by those of healthy animals in a diln. of 1:10. Goats that recover are immune to a new attack, and a vaccination trial involving several hundred animals revealed that a formolized vaccine also provides some protection. Gramicidin, given in the early stages, mitigates the attack.—A. MAYR-HARTING.

DURRELL, W. B. (1954). **ACTH valuable in case of acute coliform mastitis.**—*J. Amer. vet. med. Ass.* **125,** 373-375. **898**

D. administered by i/m injection 300 units of adrenocorticotrophic hormone to a cow with acute mastitis from which *Bact. coli* was isolated. At the same time large doses of penicillin and either terramycin or streptomycin were given by parenteral injection. It was his opinion that the A.C.T.H. promoted the cow's recovery.—R.M.

PETERS, J. (1953). Die Bedeutung bestimmter Coli-Typen für die Entstehung der Darmerkrankungen der Jungtiere, insbesondere der Kälber und Ferkel. [**Importance of certain strains of *Bact. coli* in the aetiology of intestinal diseases in young animals, particularly calves and pigs.**] — *Dtsch. tierärztl. Wschr.* **60,** 415-420. **899**

A general account of the production of intestinal disease in weaned and unweaned calves and piglets by both normal and mutant strains of *Bact. coli*. P. considered that the changes in the flora of the intestine were related to such disease.—H. BEHRENS.

GEURDEN, L. M. G. & DEVOS, A. (1954). **Coli-granulomatosis in poultry.**—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 227-228. [English and French summaries: p. 45 of Summaries of Section Papers.] **900**

A general account of *Bact. coli* granuloma in fowls. Over a period of 5 years, the authors observed 42 cases of this disease.—R.M.

TAROZZI, G. (1954). Studio delle dimensioni dell'*E. coli* durante le fasi successive di accrescimento. [**The size of *Bact. coli* at different stages of growth.**]—*Boll. Soc. ital. Biol. sper.* **30,** 838-841. **901**

Three hours after being transferred to fresh culture medium, cells of *Bact. coli* reached an average size 1·7 times that of cells in the parent culture. Thereafter the av. size slowly decreased.—R.M.

JOSLAND, S. W. (1953). **Observations on the aetiology of bovine and ovine salmonellosis in New Zealand.**—*N.Z. vet. J.* **1,** 131-136. **902**

J. described two outbreaks of salmonella infection, in cattle and sheep respectively, and serological tests carried out. The outbreak in cattle appeared to be associated with a drinking pond; *S. typhi-murium* was isolated from the water and from the faeces of birds using the pond. It was not possible to determine the origin of the outbreak in sheep but, initially, dogs had been fed the carcasses of dead sheep and *S. typhi-murium* was isolated from their faeces.—C. A. E. BRIGGS.

NÉEL, R., KAWEH, M., JORGENSEN, K. & TASLIMI, H. (1954). Introduction à l'étude des salmonella et des salmonelloses en Iran. [**Salmonella infections in domestic animals in Iran.**]—*Arch. Inst. Hessarek.* pp. 28-35. **903**

A note on observations made on salmonella infection in domestic animals in Iran, mostly in pigs and calves, but with occasional reference to birds and other animals.—A.S.

MESSOW, C. & STOLL, L. (1954). Ein Beitrag zur Salmonellose des Hundes. [**Salmonella infection in dogs.**] — *Lebensmitteltierarzt.* **5,** 103-106. **904**

An account of *S. typhi-murium* infection in 2 dogs. P.M. examination revealed anaemia, endothelial swelling in the liver and kidney, abscesses in the spleen, pulmonary congestion, and enteritis.—W. G. SILLER.

BRILL, J. & GOŁĘBIOWSKI, S. (1953). Lokalizacja *Salmonella dublin* w tkankach nosicieli-siewców. [*S. dublin* **in the tissues of carriers.**]—*Roczn. Nauk. rol.* Ser. E. **66,** 1-19. [English and Russian summaries. Abst. from English summary.] **905**

The authors observed 3 cattle which became carriers of *S. dublin* after implantation of the organism in their tissues [no details given]. They described the numerous ways in which the organisms could arrive in the faeces, milk, or urine, particularly when unfavourable circumstances lowered the animals' resistance and encouraged the recrudescence of infection with development of bacteraemia. —A.S.

HURLEY, N. A. & AYRES, J. C. (1953). **A comparison of six enrichment media for isolating *Salmonella pullorum* from egg products.**—*Appl. Microbiol.* **1,** 302-306. **906**

For the isolation of *S. pullorum* from fresh and dried egg, broth containing 25% Ringer's solution was superior to broth containing selenite-F or tetrathionate.—R.M.

BONADUCE, A. (1954). Ricerche sull'agglutinazione di emazie sensibilizzate con antigeni di *S. pullorum*. [**Agglutination of blood corpuscles sensitized with *S. pullorum* antigens.**] —*Nuova Vet.* **30,** 138-146. **907**

The r.b.c. of sheep and fowls sensitized with *S. pullorum* antigen gave satisfactory agglutination; those of cattle were slightly agglutinable and those of the pig gave non-specific agglutination with normal sera and with physiological saline. B. concluded that the reaction was a strictly specific one in that r.b.c. sensitized with *Bact. coli* and *S. enteritidis*

antigens were not agglutinated by anti-pullorum sera which, instead, agglutinated r.b.c. sensitized with pullorum antigen.

—T. E. Gatt Rutter.

Harwood, P. D. & Stunz, D. I. (1954). **The treatment of fowl typhoid with furazolidone.** —*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 222-224. [English and French summaries: pp. 43-44 of Summaries of Section Papers.] **908**

An account of the treatment of experimental and field outbreaks of fowl typhoid by the administration of furazolidone in the food at a conc. of 0·011%. Mortality in affected flocks ceased after treatment for 2–5 days, but unless the birds were moved to fresh ground, the disease sometimes recurred after treatment ceased. An improvement in the growth rate and colouring of uninfected birds given the drug was noticed. The LD_{50} of furazolidone was about 500 mg./kg.—R.M.

Ono, T., Kato, E., Lee, S. T., Hamada, S., Hirato, K., Fukumi, H. & Sakaguchi, G. (1953). **[Studies on salmonellosis in chicks. I. Bacteriological observations on dead embryos and brooding chicks.]**—*Vet. Res., Japan.* **1,** 61-66. [In Japanese. English summary.] **909**

S. bareilly was isolated from dead baby chicks. The authors observed that *S. senftenberg* infections occur most frequently on the 5–10th days after hatching, the incidence of infection decreasing rapidly thereafter. The incidence of *S. pullorum* infection is highest during the 15–20th days after hatching and decreases gradually thereafter.—Kogi Saito.

Hamada, S. (1953). **[Bacteriological studies in dead-in-shell chicks. I. Examination for the presence of micro-organisms in dead embryos, dead-in-shell chicks, and dead newly-hatched chicks, and the isolation of salmonella organisms. II. Pathogenicity of the isolated organisms, *S. thompson* var. *berlin* and *S. senftenberg*.]**—*Jap. J. vet. Sci.* **15,** 79-88 & 91-99. [In Japanese. English summaries pp. 89-90 & 100-101.] **910**

Salmonella thompson var. *berlin* and *S. senftenberg* were isolated from dead embryos and from dead-in-shell chicks from one farm, and from chicks which had died at the age of 4–12 days from several farms. H. demonstrated that both organisms could penetrate the egg shell. Reactors to the agglutination test for *S. senftenberg* were found amongst chicks and adult fowls on infected farms.

—Kogi Saito.

Boese, W. (1954). Erfahrungen über den Nachweis von Paratyphus-B-Ausscheidern bei bakteriologischen Kontrolluntersuchungen des im Lebensmittelgewerbe tätigen Personenkreises. **[Recognition of carriers of *Salmonella paratyphi B* amongst persons engaged in the food industry.]**—*Z. Hyg. InfektKr.* **139,** 433-442. **911**

An account of observations on the carrier state of *S. paratyphi B* in human beings, with observations on duration of the condition.

—A.S.

Cherry, W. B., Davis, B. R., Edwards, P. R. & Hogan, R. B. (1954). **A simple procedure for the identification of the genus *Salmonella* by means of a specific bacteriophage.** — *J. Lab. clin. Med.* **44,** 51-55. [Authors' summary modified.] **912**

The authors described a simple and specific technique for the identification of salmonella by means of a bacteriophage, applicable to the screening of these organisms during surveys to determine the incidence of enteric pathogens, or in other circumstances where large numbers of colonies from isolation plates require to be examined. The uniform susceptibility of diphasic Arizona paracolon bacteria to the "O–1" phage described by Felix & Callow [*V.B.* **14,** 303] constituted a diagnostic tool by means of which the ecology and the pathogenicity of this group could be clarified. The cost of materials used in phage tests was approx. one-tenth that of agglutination tests employing polyvalent salmonella serum, and the two methods are of comparable although inverse specificity. From 200 to 400 cultures could be tested with ease by one person during a single day.

Reveco, P. E. (1953). La brucelosis en los establos—lecherías de la comuna de Santiago. **[*Brucella abortus* infection in dairy herds in the municipality of Santiago.]** — *Rev. Soc. Med. vet., Santiago.* **4,** No. 7. pp. 7-9. **913**

All the 58 dairy farms in the municipal area of Santiago were found to be infected with *Br. abortus*. Of 1,000 cows examined 31·1% were reactors to the serum agglutination test and 11·1% gave a doubtful reaction.

—I. Martini.

Benedek, L. (1952). Feltárt antigének alkalmazása a brucellosis serologiai diagnosztikájában és az egyes brucellatipusok elkülönítésében. **[The use of purified antigens in the diagnosis of brucellosis and in differentiation of *Brucella* types.]**—*Mag. allator. Lapja.* **7,**

355-360. [In Hungarian. English and Russian summaries.] **914**

Of various antigens tested for use in the precipitin reaction for the differentiation of strains of brucella organisms, a purified antigen prepared by extraction with trichloracetic acid gave the best results. Using this antigen it was possible to differentiate *Br. melitensis* from either *Br. suis* or *Br. abortus*, but not *Br. suis* from *Br. abortus*.—I. MARTINI.

WELLMANN, G. (1953). Insekten als Brucelloseüberträger—neue experimentelle Ergebnisse. **[Insects as carriers of brucellosis—results of recent experiments.]**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part. I. Vol. 1. pp. 79-84. Discussion: Part II. pp. 170-171. [In German. English and French summaries.] **915**

W. confined some thousands of *Musca domestica* inside a building in which was placed the placenta of a cow with *Br. abortus* infection. After feeding on the placenta for a few hours, the flies were allowed to fly into an adjacent building which housed 8 pregnant heifers, free from brucella infection. Small skin wounds were made on these animals to encourage the flies to settle on them. Four of the heifers developed *Br. abortus* infection. Similar experiments with *Stomoxys calcitrans* were less successful because these flies were reluctant to feed on the infected placenta, but 2 out of 8 pregnant heifers became infected after exposure to the flies. When *S. calcitrans* fed on infected cattle, and were then allowed to fly into an adjacent building which housed uninfected cattle, 3 out of 5 pregnant heifers became infected in this way.—R.M.

SACKMANN, W. (1954). Zur Ausscheidung von Stamm Buck 19 aus dem Kuheuter. **[Excretion of *Br. abortus* in the milk of vaccinated cows.]**—*Schweiz. Arch. Tierheilk.* **96,** 57-60. [English, French and Italian summaries.] **916**

S. isolated 108 virulent strains of *Br. abortus* from the milk of cows that had been inoculated with *Br. abortus* Strain 19. This infection of the udder was considered to be due either to a breakdown in immunity or to infection contracted before vaccination.

—W. G. SILLER.

KING, N. B., VENZKE, W. G. & EDGINGTON, B. H. (1953). **The application of a suggested method for differentiating vaccinal and infection titers in cattle known to be infected with *Brucella abortus*.**—*J. Amer. vet. med. Ass.* **123,** 121-125. **917**

Dick *et al.* (1947) suggested that cattle with *Br. abortus* infection could be distinguished from cattle which had been vaccinated with Strain 19 *Br. abortus* by the i/m injection of 5 ml. Strain 19 vaccine: this injection would cause a rise in the serum agglutination titre 15–17 days later in vaccinated cattle but not in infected cattle. The present authors, using this test, found that a rise in the serum agglutinin titre occurred in 27 out of 45 infected cattle after injection of the vaccine, and they therefore concluded that the test was of doubtful value.

—C. C. BANNATYNE.

BRUNI, A. & DE FELIP, G. (1954). Sulla differenziazione delle specie del genere brucella con la prova di Renoux. **[Typing of brucella by the test described by Renoux.]**—*Boll. Soc. ital. Biol. sper.* **30,** 793-795. **918**

The authors stated that the sodium diethylcarbamate test for the typing of brucella, described by Renoux [*V.B.* **22,** 3922], was difficult to interpret and was no improvement on existing methods.—R.M.

BERMAN, D. T. & IRWIN, M. R. (1954). **The immunogenicity for cattle of *Brucella abortus* strain 19 and M vaccine (Huddleson).** — *J. Amer. vet. med. Ass.* **125,** 401-405. **919**

Groups of calves and sexually mature heifers were vaccinated with Strain 19 or mucoid strain *Br. abortus* vaccines. During pregnancy, these and unvaccinated control cattle were exposed to virulent *Br. abortus* by the conjunctival route. Half the animals in each group received a challenge inoculum of 6×10^5 organisms, the other half receiving 6×10^6 organisms. Animals vaccinated with Strain 19 were significantly more resistant to this infection than unvaccinated controls, but animals vaccinated with the mucoid strain were not significantly more resistant than the controls.

RYAZANTSEV, V. F. (1953). **[Weakening of agglutination in brucella infection in cattle on isolation farms.]**—*Veterinariya, Moscow.* **30,** No. 8, pp. 16-17. [In Russian.] **920**

A note of agglutination titres for brucella infection in 532 cows.—A. MAYR-HARTING.

I. BORNSTEIN, S., SAMBERG, Y. & RAUTENSTEIN-ARAZI, A. (1954). **The therapeutic use of parenteral and oral penicillin in fowl spirochaetosis.**—*Papers presented to Xth World's Poult. Congr.,* Edinburgh, 1954. pp. 262-265. [English and French summaries: p. 53 of Summaries of Section Papers.] **921**

II. BORNSTEIN, S. & SAMBERG, Y. (1954). **[The treatment of avian spirochaetosis with peni-**

cillin *per os.*]—*Refuah vet.* **11,** 13-26. [In Hebrew. Abst. from English summary: p. 55.] **922**

I. The authors determined the serum-level responses of fowls to aqueous crystalline penicillin, aqueous suspensions of procaine penicillin, procaine penicillin in oil, and crystalline penicillin in a water-in-oil vehicle, administered parenterally. [See also *V.B.* **24,** 2491.] There was no difference in the response between the i/m and s/c routes with aqueous crystalline penicillin. It was impracticable to express dosage as units per unit of body wt., because within the wt. limits of 200 g. to 2 kg. chickens receiving the same dose gave the same serum-level response.

The i/m injection of 10,000 units aqueous crystalline penicillin gave very satisfactory results when administered to fowls before the last stages of spirochaetosis. Only visibly sick fowls should be treated, since prophylactic treatment was useless. Birds weighing more than 3 kg. were cured by the oral administration of 200,000 units in the form of tablets. The dosage for birds weighing 2 to 3 kg. was 100,000 units; and for birds weighing less than 1·5–2 kg., 50,000 units. Oral penicillin can be given only on an empty stomach, and the fast must be extended for 3 more hours following administration.

II. The authors gave details of the treatment of spirochaetosis in fowls by the oral administration of penicillin, as reported above.

—R.M.

Rossi, P. & Kolochine-Erber. (1952/53). Leptospiroses des grands animaux domestiques. **[Leptospirosis in horses, cattle and pigs.]**—*Bull. Soc. Sci. vét. Lyon.* **54 & 55,** 211-227. **923**

The authors gave a brief account of leptospira infection in cattle and pigs including its incidence in Europe and Asia. They made an attempt to classify the clinical manifestations of the disease in equine species. They gave an account of agglutination tests on 207 sera, of which 176 were from horses affected with equine periodic ophthalmia and the remainder from horses that had been in contact with affected ones.—G. V. Laugier.

Hoag, W. G. & Bell, W. B. (1954). **Isolation of *Leptospira pomona* from a bovine eye.**—*J. Amer. vet. med. Ass.* **125,** 381-382. [Authors' summary modified.] **924**

A calf infected with *L. pomona* by the i/m injection of infective blood, developed transient bilateral uveitis after recovering from the initial febrile reaction. The authors isolated *L. pomona* from the aqueous humour of one of the affected eyes. No involvement of the eye was observed in calves used for subsequent passages of the organism.

Rossi, P. & Kolochine-Erber, B. (1954). Iridocyclites des équidés et leptospiroses. **[Equine periodic ophthalmia and leptospirosis.]**—*Rev. Path. gén. comp.* **54,** 432-477. Discussion: pp. 477-479. **925**

The authors reviewed equine periodic ophthalmia with special reference to its aetiology. Experimental reproduction of the condition, recently, provided further support for the theory that the causal agent is a leptospira. This, however, was still subject to confirmation. Recurrence could be due to the existence of other serological types or, more likely, of more than one causal agent. Matters were complicated by the frequent occurrence of milder forms—often the only manifestation being a uveal inflammation difficult to detect without an ophthalmoscope. Certain febrile conditions influenced the behaviour of the serum antibody.

The serological variations observed in man would, no doubt, be also confirmed in animals by repeated experiments.

A more rational line of treatment and a readjustment of the clinical approach were advocated for the symptomatology and detection of the milder forms of equine periodic ophthalmia which the authors considered far more frequent than the typical clinical ones.

—T. E. Gatt Rutter.

Woratz, H. (1954). Über Ruheformen der Leptospiren. **[Resting forms of leptospira.]**—*Zbl. Bakt. I. (Orig.).* **160,** 613-628. **926**

Leptospira canicola and *L. icterohaemorrhagiae,* grown on solid agar medium assume angular, s-shaped, and spiral forms. In the course of several weeks they dissolve completely or change into spherical forms. These forms represent resting forms of leptospira, which render possible their permanent exogenous existence.—W. R. Bett.

Keast, J. C. & McBarron, E. J. (1954). **A case of bovine enterotoxaemia.**—*Aust. vet. J.* **30,** 305-306. **927**

Cl. welchii type D toxin was demonstrable in the small intestine of one of 4 Aberdeen Angus cows which died under circumstances indicative of enterotoxaemia. The authors considered the reduction test with Benedict's qualitative urine reagent to be a valuable aid to diagnosis. Enterotoxaemia had been suspected

to occur in cattle in N.S.W. for some time, but had not previously been confirmed by lab. tests.
—K. G. JOHNSTON.

BINNS, W. & FINCHER, M. G. (1954). **Vibriosis in cattle.**—*Cornell Vet.* **44,** 512-530. [Authors' summary modified.] **928**

The results of the bacteriological examination and the agglutination tests, using antigens from two strains of *V. fetus*, show no significant correlation. The only test in which a positive diagnosis of *V. fetus* infection could be made involved isolating the organism from the preputial mucus, semen or vaginal mucus.

The organism was found infrequently in the vaginal mucus of cows in a herd known to be infected but was found readily on bacteriological examination of the semen and preputial mucus of the bulls in infected herds. The authors considered that it should not be necessary to take more than 3 samples of preputial mucus from an infected bull to demonstrate *V. fetus*, provided that gross contamination is avoided.

GALASSI, D. (1953). L'isolamento del *Vibrio foetus* in un focolaio di aborto enzootico dei bovini. **[Isolation of *Vibrio fetus* from an outbreak of abortion in cattle.]**—*Nuova Vet.* **29,** 166-170. **929**

An account of the isolation of *V. fetus* from the bull and from aborted foetuses and of various media used for the purpose.—I. MARTINI.

HOP, A. (1954). Resistensundersøkelser av forskjellige mastitisfremkallende bakterier. **[Resistance to antibiotics of organisms from cases of mastitis.]** — *Nord. VetMed.* **6,** 643-650. [In Danish. English and German summaries. Abst. from English summary.] **930**

Of 158 strains of bacteria isolated from mastitis in cows, ewes and sows, staphylococci were the most sensitive to chloramphenicol and aureomycin, and the coliform bacteria were the most sensitive to chloramphenicol. All forms of *C. pyogenes* were sensitive to antibiotics, 83% of them to sulphathiazole; however, sulphathiazole is not useful in treatment of mastitis. Chloramphenicol was better than penicillin against group B streptococci.
—F. R. PAULSEN.

HAGA, M., FUJIMOTO, Y. & ONO, T. (1953). **[Studies on nephritis interstitialis circumscripta in slaughtered swine.]**—*Jap. J. vet. Sci.* **15,** 135-144. [In Japanese. English summary pp. 145-146.] **931**

An account of observations on the histology of lesions in 28 slaughter pigs with interstitial nephritis. The authors attributed the lesions to unspecified bacterial infection of haematogenous origin. Leptospira were not demonstrable.—KOGI SAITO.

AUCLAIR, J. E. (1954). **The inhibition of micro-organisms by raw milk. III. Distribution and properties of two inhibitory substances, lactenin 1 and lactenin 2.**—*J. Dairy Res.* **21,** 323-336. [Author's summary modified.] **932**

The author determined the lactenin 1 and lactenin 2 contents of a number of samples of bulk milk and milk from separate quarters of cows with and without infection. The milk of cows sensitive to mastitis had about the same content as the milk from resistant ones. He observed the effect of heat on lactenin 1 and lactenin 2 for various combinations of time and temperature. Heat treatment corresponding to the legal standards of pasteurization destroyed 50% lactenin 1, but did not affect lactenin 2. He studied the inhibitory action of lactenin 1 and lactenin 2 on several micro-organisms. All the organisms tested were sensitive to lactenin in sterilized milk. Stimulative substances for certain micro-organisms, present in milk, were found to interfere with the inhibition by lactenin. He studied the action of lactenin on the growth of *Str. pyogenes*. He compared the effect of hydrogen peroxide on lactenin with that of cysteine.

SAZ, A. K. & EAGLE, H. (1953). **The co-killing of penicillin sensitive and penicillin resistant bacteria at low concentrations of the antibiotic.**—*J. Bact.* **66,** 347-352. **933**

The number of colonies resulting from a threshold concentration of penicillin acting on cocci decreased as the size of the inoculum increased. Highly resistant strains, when plated with the parent sensitive strain, were killed by low concentrations of penicillin.—A. SEAMAN.

MORENA, L. S. (1954). La micrología en la práctica veterinaria y en patología comparada. **[Mycology in veterinary practice and in comparative pathology.]** — *Arch. Vet. Pract., Corunna.* **3,** No. 34. pp. Mic 1-Mic 6. (12 pp.) **934**

A note pleading for greater attention to fungi as the cause of disease in animals.
—I. MARTINI.

HAGE, T. J. & MOULTON, J. E. (1954). **Skeletal coccidioidomycosis in dogs.**—*Cornell Vet.* **44,** 489-500. **935**

The most remarkable feature common to the 4 Californian cases of chronic *Coccidioides immitis* infection in dogs, of which details were given in this paper, was the high degree of

skeletal involvement [see also *V.B.* **24**, 366]. The primary and outstanding clinical symptom in all cases was lameness, and X-ray and P.M. findings showed ribs, vertebral segments, pelvis, and long bones to be affected. In 3 dogs there was infection of the liver and though pulmonary lesions, which were young and probably secondary, were only exhibited by one dog it was considered that in each case the lungs were the site of the primary infection.

—G. C. AINSWORTH.

EGEBERG, R. O. (1954). **Coccidioidomycosis. Its clinical and climatological aspects with remarks on treatment.**—*Amer. J. med. Sci.* **227**, 268-271. [Abst. from author's summary.] **936**

The author described and discussed the more important environmental aspects of the areas in the U.S.A. in which coccidioidomycosis is endemic. The antibiotic, prodigiosin appeared to be of some value in treatment.

MARSELOU, U. & SEGRETAIN, G. (1954). Action des antibiotiques *in vitro* sur la croissance des *Candida*. [*In vitro* **action of antibiotics on** *Candida albicans*.]—*Ann. Inst. Pasteur.* **87**, 229-233. **937**

Penicillin, streptomycin, terramycin, chloramphenicol, and aureomycin were found to be without action on the growth rate and morphology of *C. albicans*, *C. tropicalis*, and *C. krusei* grown *in vitro* in a synthetic medium, with or without growth factors, or in Sabouraud glucose broth.—G. C. AINSWORTH.

NOSKOV, A. I. & KOROLEVA, V. P. (1953). [**A skin test for** *Histoplasma farciminosum* **infection in horses.**] — *Veterinariya, Moscow*. **30**, No. 8, pp. 10-14. [In Russian.] **938**

When 0·3–0·4 ml. of sterile filtrate of a 3–4 months' culture of *H. farciminosum* is injected intracutaneously, infected horses give a specific reaction (diam. 5–50 mm., but usually 12–15 mm.) in 48–72 hours. The reaction persists for 2 months after recovery from the infection and in generalized cases it may persist up to 5 months. Horses incubating the disease also react.—A. MAYR-HARTING.

VERGE, J., PARAF, A. & BERTRAND, A. (1954). La réaction à l'histoplasmine chez le cheval et chez le chien. [**The reaction of horses and dogs to histoplasmin.**] — *C. R. Soc. Biol., Paris*. **148**, 811-812. **939**

Histoplasmin skin tests made in France during 1953 on 83 [? apparently healthy] animals (22 horses, 4 donkeys, 4 mules, 51 dogs) were, like the 1952 tests [*V.B.* **23**, 2492], all negative.—G. C. AINSWORTH.

MCGRATH, J. T. (1954). **Cryptococcosis of the central nervous system in domestic animals.**—*Amer. J. Path.* **30**, 651. [Only abst. given. Abst. from abst.] **940**

At the Annual Meeting of the American Association of Pathologists and Bacteriologists, Philadelphia, 1954, the author reported that in 6 (3 cats, 2 dogs, one horse) of 10 cases of 'blastomycosis' examined P.M. at the University of Pennsylyania Veterinary School during the past five years clinical examinations had revealed neurological disturbances and that the P.M. findings were not inconsistent with a diagnosis of *Cryptococcus neoformans* infection. The organism is stated to have been cultured from two of these cases.—G. C. AINSWORTH.

BAKER, N. F. & DAVIS, D. W. (1954). **Spray application for the treatment of ringworm in cattle.**—*Vet. Med.* **49**, 275-276. **941**

An outbreak of ringworm in a herd of 700 heifers, 1–2 years old (300–400 of which showed ringworm lesions) was treated by spraying the whole herd with 'captan' (N-trichloromethylmercapto-4-cyclohexene-1,2-dicarboxamide) at a conc. of 0·45–0·5 lb. in 20 gal. of water and applied, at a pressure of 400–450 lb. at the pump, at a rate of 1·0–1·5 gal. per animal. After two weeks, by when 60–80% of the lesions had lost the asbestos-like crust and half were no longer showing desquamation while hair was being replaced on the other half, a second application of spray was given. Thirty-three days later it was estimated that only 1–3% showed active lesions and of these animals only a few showed more than one or two small lesions. The authors concluded that the use of the drug merits further clinical evaluation.

—G. C. AINSWORTH.

AUSTWICK, P. K. C. (1954). **The isolation of** *Trichophyton discoides* **from cattle.** — *Vet. Rec.* **66**, 224-225. **942**

The essentials of the technique here described for the isolation of *T. discoides* are to pick out an infected hair under a binocular microscope (×30), remove the outer layers of the hair sheath by careful manipulation with fine mounted needles in a drop of sterile water, wash the hair rapidly in several further drops of sterile water, and then break away or slip off the remainder of the sheath in the last drop so as to release the arthrospores. The dense suspension of spores so obtained is streaked out on a plate of nutrient agar supplemented with penicillin (20 units/ml.) and streptomycin (40 units/ml.), and incubated at 37°C. Colonies

reach a diam. of 3–4 mm. in 7 days when provisional identification can often be made.
—G. C. AINSWORTH.

TARLATZIS, C. B. (K. V.), PANETSOS, A. & DRAGONAS, P. (1954). **[Aspergillus infection in fowls in Greece.]** — *Delt. Hellen. kten. Hetair.* **2,** 551-562. [In Greek. Abst. from French summary.] **943**

An account of an outbreak of *Aspergillus fumigatus* infection amongst chicks aged 10–15 days and pullets aged 3 months. The authors stated that it was the first reported outbreak of the disease in Greece. Mouldy litter was considered to be the source of the infection.
—R.M.

BELLAZZI, D. (1954). Actinomicosi polmonare da corpo estraneo. **[Actinomycosis of the lungs of cattle following penetration by a metallic foreign body from the reticulum.]**— *Riv. Med. vet., Parma.* **6,** 147-154. **944**

An account of actinomycosis in the lungs of two cattle. The infection was apparently introduced by pieces of wire which penetrated the diaphragm and lungs from the reticulum.
—I. MARTINI.

EDWARD, D. G. ff. (1954). **The pleuropneumonia group of organisms: a review, together with some new observations.**—*J. gen. Microbiol.* **10,** 27-64. (149 refs.) **945**

E. gave a general account of the pleuropneumonia group of organisms, including details of methods of study. He described 18 types, including the causal organisms of bovine contagious pleuro-pneumonia, caprine contagious pleuro-pneumonia, ovine and caprine contagious agalactia; the P. and S. strains from the genital organs of cattle; the pleuropneumonia-like organisms from dogs described by Schoetensack (1904) as *Asterococcus canis* Types I and II; the α-, β-, and γ-strains from healthy dogs and strains isolated from the "respiratory disease of fowls" in the U.S.A. He also dealt with strains from rodents and from man and with saprophytic strains.
—J. E. SMITH.

VAN ROEKEL, H. & OLESIUK, O. M. (1954). **The etiology of chronic respiratory disease.** —*Proc. 90th Ann. Meet. Amer. vet. med. Ass.* Toronto, July 20-23, 1953. pp. 289-303. **946**

Turkeys placed in direct contact with infected fowls developed "chronic respiratory disease". Fowls placed in contact with turkeys infected with infectious sinusitis remained healthy. Guinea fowl and pheasants were also susceptible to the disease, but the cotton rat was not. The lungs and exudates from the infra-orbital sinus, nasal cavities, trachea, and air sacs of infected fowls were infective for other fowls and for chick embryos. The blood, liver, and spleen were apparently not infective.

The disease was readily established by the intraperitoneal inoculation of infective material; with difficulty by intramuscular and subcutaneous inoculation, and not at all by oral and cloacal routes. Chickens that had recovered from natural infection possessed a moderate degree of immunity, and carriers were detected among birds from infected flocks. Uncomplicated cases of the disease responded to a limited extent to treatment with terramycin and carbomycin, but did not respond to aureomycin, chloramphenicol, streptomycin, or bacitracin.

The authors supported the findings of previous workers [see *V.B.* **23,** 2494] that the causal agent of chronic respiratory disease has many properties in common with organisms of the pleuro-pneumonia group.—R.M.

See also abstr. **1120** (diseases of the mammary gland of cows); **1220** (report, Medical Research Council); **1221-1223** (reports, India); **1225** & **1226** (reports, U.S.A.); **1227** (book, mycology).

DISEASES CAUSED BY PROTOZOAN PARASITES

PEEL, E. & CHARDOME, M. (1954). Sur les infection à trypanosomes, transmises par *Glossina brevipalpis* dans la région du Mosso-sud (Urundi). **[Species of trypanosomes transmitted by *Glossina brevipalpis*.]** — *Ann. Soc. belge Méd. trop.* **34,** 259-268. [In French. Flemish summary.] **947**

After giving a brief summary of work done in the last 40 years by other workers who demonstrated the presence of various trypanosomes in *G. brevipalpis* by dissection the authors described their own work. In the course of a year they dissected 6,397 *G. brevipalpis* captured in the Urundi region. Of these 7·48% were found to be infected with one or other of the congolense group, including *T. simiae,* 1·09% were infected in the salivary glands with *T. suis,* and *T. grayi* was present in 4%. *T. gallinarum* was found in some of the mosquitoes obliged to feed upon fowls.
—A.S.

PEEL, E. & CHARDOME, M. (1954). Étude expérimentale d'une souche appelée *T. congolense* var. *urundiense* transmise par *Glossina brevipalpis* du Mosso (Urundi). **[A strain of**

Trypanosoma congolense **transmitted by** *G. brevipalpis.*] — *Ann. Soc. belge Méd. trop.* **34,** 303-309. [In French. Flemish summary.] **948**

A new strain of *T. congolense,* which the authors proposed to name *T. congolense* var *urundiense,* was recovered from the pig. It was differentiated from *T. congolense* (Broden) mainly on the size of the kinetoplast and the distance of the kinetoplast from the nucleus. —Jas. G. O'Sullivan.

Peel, E. & Chardome, M. (1954). Étude expérimentale de souches de *T. simiae* Bruce 1912, transmises par *Glossina brevipalpis* du Mosso (Urundi). **[Strains of** *Trypanosoma simiae* **transmitted by** *G. brevipalpis.*]—*Ann. Soc. belge Méd. trop.* **34,** 345-359. [In French. Flemish summary.] **949**

By a study of the development of *T. simiae* in G. brevipalpis and in the pig it was decided that the trypanosome was monomorphic. It stained more deeply than *T. congolense,* with which it could occur in conjunction. *T. simiae* was not transmissible to laboratory animals. —Jas. G. O'Sullivan.

Cosar, C., Ducrot, R., Gailliot, P. & Baget, J. (1954). Etude du sel suramine-pentamidine (4.891 R.P.). **[Trypanocidal action of a suramin-pentamidine compound.]** — *C. R. Soc. Biol., Paris.* **148,** 78-81. **950**

The synergistic action of pentamidine and suramin was shown by the amount required to protect rats against *Trypanosoma brucei* for 4 weeks. In combined therapy, a dose of only 0·7 mg./100 g. of the former and 0·9 mg./100 g. of the latter sufficed, whereas when the drugs were given singly, 5·0 mg./100 g. of the former and 2 mg./100 g. of the latter were necessary.—M. L. Clarke.

Chaoulitch, S. P. (1954). *Leishmania donovani* (Laveran et Mesnil, 1903) parasite aussi les erythrocytes. [*Leishmania donovani* **parasitizing erythrocytes.**]—*Bull. Soc. Path. exot.* **47,** 244-246. **951**

C. confirmed the statements of workers half a century ago, since discredited, of the presence of endo-erythrocytic leishmania bodies. He claimed to have found such forms in smears of liver, bone marrow and spleen of very young infants in an advanced stage of kala-azar.—M. L. Clarke.

Herin, V. & Thienpont, D. (1954). Contribution à l'étude des accidents toxiques consécutifs à l'administration de certains trypanocides et des photosensibilisations en général au Ruanda-Urundi. **[Poisoning and photosensitization after treatment of bovine trypanosomiasis.]** — *Ann. Soc. belge Méd. trop.* **34,** 433-445. **952**

Symptoms resembling those of photosensitization followed the administration of dimidium bromide and of antrycide. The authors maintain that the lesions are a cutaneous manifestation of concurrent, latent *Theileria* or *Babesia* infection.—Jas. G. O'Sullivan.

Ford, E. J. H., Wilmshurst, E. C. & Karib, A. A. (1954). **Studies on ethidium bromide. III. Toxicity observations in Sudanese cattle.** —*Brit. vet. J.* **110,** 96-100. [For previous parts, see *V.B.* **24,** 71 & 1053.] **953**

Nineteen young Sudanese bulls were experimentally infected with *T. congolense;* 15 were injected s/c with ethidium bromide at different dosage levels to study its toxicity; the other four were similarly injected with dimidium bromide, 3 mg./kg. Of the latter four, two had transient liver damage. Of those given ethidium bromide, two out of four treated with 10 mg./kg. died and one of those which survived had transient liver damage; no liver damage was demonstrable either by the van den Bergh test or by examination of biopsy specimens in seven which received 1 mg./kg. nor in four given 5 mg./kg.—F.E.W.

Agosin, M. & von Brand, T. (1954). **Studies on the carbohydrate metabolism of** *Trypanosoma congolense.*—*Exp. Parasit.* **3,** 517-524. [Authors' summary modified.] **954**

The rate of oxygen consumption of *T. congolense* was nearly as high as that of *T. evansi* and *T. brucei,* but its rate of glucose consumption was lower. The respiratory quotient was high. The main metabolic end products, accounting nearly quantitatively for the degraded glucose, were acetic acid, pyruvic acid, and carbon dioxide. Only traces of succinic acid were produced. No lactic, citric, malic, formic, propionic or higher volatile acids were excreted, nor was ethyl alcohol formed.

Kraneveld, F. C. & Mansjoer, M. (1954). Enige gegevens over de invloed van surra op de graviditeit en over de frequentie van een intrauteriene infectie bij deze ziekte. **[Intrauterine infection in surra.]**—*Hemera zoa.* **61,** 97-108. [In Dutch. English, French, German and Indonesian summaries.] **955**

Mummified foetuses were found in 5 mares that had been infected experimentally with *Trypanosoma evansi.* Trypanosomes were demonstrable in some foetuses of experimentally in-

fected dogs and g. pigs, but not in new-born piglets and kittens and foetuses of cats, rabbits and white rats from infected dams.

—C. A. VAN DORSSEN.

HOLZ, J. (1954). Experimentelle Untersuchungen über die Möglichkeit der Übertragung von Trypanosoma equiperdum durch Blutegel. [**Attempts to transmit** *T. equiperdum* **to g. pigs, using leeches** (*Hirudo medicinalis*).]—*Berl. Münch. tierärztl. Wschr.* **67,** 158. [English summary.] **956**

H. fed leeches on a g. pig heavily infected with *T. equiperdum*; he removed some of them before they became completely engorged and fed them on a healthy g. pig. The ingested trypanosomes were rapidly destroyed in the leech, possibly by an enzyme.—M. L. CLARKE.

FITZGERALD, P. R., HAMMOND, D. M. & SHUPE, J. LEG. (1954). **The role of cultures in immediate and delayed examinations of preputial samples for** *Trichomonas foetus*.—*Vet. Med.* **49,** 409-412 & 454. **957**

When 272 preputial samples from 9 bulls were examined by direct microscopy after 12 hours at room temp. and after 24 hours at 39°F., there was a marked decrease in the proportion of samples found positive by direct examination. However, under the same conditions there was no decrease in accuracy of examination by the culture method; the authors gave details of the technique.—D. POYNTER.

MUNDT. (1954). Beitrag zum Problem eines Entwicklungszyklus der Trichomonas foetus unter besonderer Berücksichtigung vakuoliger Rundformen. [**Life cycle of** *Tr. foetus*, **with special reference to vacuolated spherical forms of the organism.**]—*Prakt. Tierarzt.* No. 6, pp. 135-137. **958**

In a study of *Tr. foetus* in serum broth M. observed small active spindle-shaped parasites which gave rise to thicker slipper-like forms. These became sac-like and next gave rise to the typical lemon-shaped trichomonads which then developed pseudopodia and finally there appeared round forms. These, at first, had the 3 flagella and undulating membrane, but later lost the flagella and finally appeared as homogeneous plasma bodies without locomotor apparatus. Examination of the motile round forms on a warm stage revealed marked vacuolation of the endoplasm and the presence of chromatin granules, possibly associated with cell disintegration.—M. L. CLARKE.

MCGREGOR, J. K. (1954). **Observations on the therapeutic value of adrenocorticotropic hormone in clinical enterohepatitis (blackhead) in turkeys.**—*Canad. J. comp. Med.* **18,** 332-334. **959**

Turkey poults artificially infected with *Histomonas meleagridis* and showing clinical symptoms of enterohepatitis were treated with ACTH. Only a transitory delaying effect on the clinical course of the disease resulted.

—CHAS. A. MITCHELL.

GEISSLER, H. (1953). Typhlo-Hepatitis bei Hühnerküken. [**Blackhead in pullets.**]—*Dtsch. tierärztl. Wschr.* **60,** 254. **960**

A brief note on the occurrence of blackhead in pullets 4–6 weeks old. In one flock of 210 birds, 70 were affected, and 54 died within 3–10 days with severe diarrhoea, inappetence etc. The characteristic typhlohepatitis must be differentiated from the typhlitis of coccidiosis.—M. L. CLARKE.

HUGHES, W. F. & ZANDER, D. V. (1954). **Isolation and culture of** *Hexamita* **free of bacteria.** — *Poult. Sci.* **33,** 810-815. [Authors' summary modified.] **961**

Suspensions of *H. meleagridis*, obtained from enteritis in young turkeys, when inoculated into the allantoic cavity of embryonating eggs, survived and multiplied in spite of the contaminating bacteria. Rapid serial culturing from living embryos yielded a culture which, though still heavily contaminated with bacteria, no longer killed the embryo, and the period for propagation could be lengthened to 7 or more days. Various combinations and concentrations of antibiotics were employed to rid the culture of contaminating bacteria. By placing 10 mg. of streptomycin and 10 units of bacitracin into the allantoic cavity of the embryo simultaneously with the contaminated culture the bacteria were eliminated and the *Hexamita* survived. This constituted the first recorded bacteria-free culture of *H. meleagridis*.

Chick embryos aged 8–12 days were satisfactory for propagation, and the bacteria-free culture was serially passed at 7-day intervals in the allantoic cavity of 10-day old embryos. No deleterious effects were noted on the embryos and those which were allowed to hatch appeared normal in every respect. *H. meleagridis* was found in the gut of embryos which had pipped the shell and in the intestine of chicks during the first 10 days after hatching, but not in the intestine of embryos which had not yet begun to hatch. This evidence indicated that the organisms probably did not migrate through the allantoic stalk to the gut

but were ingested by the embryo when the allantoic membranes were broken in the hatching process.

LOTZE, J. C. (1954). **The pathogenicity of the coccidian parasite, *Eimeria ninae-kohl-yakimovi*, Yakimov and Rastegaeva, 1930, in domestic sheep.**—*Proc. 90th Ann. Meet. Amer. vet. med. Ass.* Toronto, July 20-23, 1953. pp. 141-146. [Author's summary modified.] **962**

A pure strain of *E. ninae-kohl-yakimovi* of ovine origin was used to produce experimental infections in 22 lambs of about 3 months in age, raised apparently free from parasites, and in 2 sheep, 2 years old, which had been raised on pasture. In one lamb diarrhoea was produced with as few as 50,000 sporulated oocysts. Diarrhoea with bloody mucus was produced in most lambs inoculated with 500,000 oocysts and in all lambs inoculated with one million or more. Bloody diarrhoea was produced by the inoculation of one of the 2-year-old sheep with one million oocysts and the other with 3 million oocysts. Diarrhoeic faeces were especially attractive to flies, and in the fly season animals passing such faeces and unprotected by screens readily became flystruck; death occurred in all those cases where treatment for fly strike was not given or where successful treatment for fly strike was not begun early enough to be of value. Deaths attributed directly to coccidiosis alone occurred in lambs inoculated with as few as 500,000 sporulated oocysts.

ITAGAKI, K. (1952). **[Studies on coccidiosis in the fowl. I. Sporogony and external conditions. II. Physico-chemical nature of the oocysts.]**—*Jap. J. vet. Sci.* **14,** 237-252; 253-259. [In Japanese. English summaries.] **963**

The author studied the influence of chemical agents, pH, temperature, and oxygen on the sporulation of coccidial oocysts, and examined by vital staining the morphology of the cell membrane, protoplasm, and vacuoles of the oocyst. He concluded that faeces and the soil of fowl runs did not provide optimum conditions for sporulation.—KOGI SAITO.

CHAMPION, L. R. (1954). **The inheritance of resistance to cecal coccidiosis in the domestic fowl.** — *Poult. Sci.* **33,** 670-681. [Author's summary modified.] **964**

A series of experimental matings involving resistant, susceptible, F_1 and F_2 individuals was conducted to test whether hereditary factors were involved in the resistance and susceptibility of the domestic fowl to *E. tenella*. All chicks resulting from these matings were infected with a uniform dosage of 100,000 sporulated oocysts of the coccidia. C. concluded that selective breeding was effective in establishing lines of chickens resistant and susceptible to caecal coccidiosis. Sex-linkage, maternal effect or cytoplasmic inheritance did not play a significant role in resistance or susceptibility to *E. tenella*. Resistance and susceptibility to caecal coccidiosis was controlled, in large part, by multiple genetic factors which did not exhibit dominance and presumably acted in an additive manner.

DAVIES, S. F. M. (1954). **Sulphonamide poisoning in chickens treated for coccidiosis.**—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 275-278. [English and French summaries: p. 55 of Summaries of Section Papers.] [Author's summary modified.] **965**

D. investigated outbreaks of sulphonamide poisoning in fowls in Great Britain. Both sexes were affected and the highest incidence under experimental conditions was observed in chicks aged 4–6 weeks. Chicks under 3 weeks of age tolerated sulphonamides well. The incidence of poisoning was higher amongst birds given sulphaquinoxaline in the drinking water than amongst similar birds given the drug in the food. Chicks reared indoors were more susceptible than chicks reared in outdoor pens on grass. Haemorrhagic lesions were produced in chicks aged 4 weeks by giving them drinking water containing 0·06% sodium sulphaquinoxaline for as little as 4 days. D. found no relationship between the appearance of symptoms of poisoning and the blood conc. of the sulphonamide. The administration of vitamin K with sulphaquinoxaline did not prevent the development of poisoning. He discussed the relationship of the condition observed to the "haemorrhagic syndrome" observed in the U.S.A.

WILLEMS, A. E. R., VANSCHOUBROEK, F. & VERCRUYSSE, R. (1954). L'action coccidiostatique du nitrophénide chez les poussins. **[Nitrophenide in treatment of coccidiosis in chickens.]**—*Papers presented to Xth World's Poult. Congr.*, Edinburgh, 1954. pp. 272-275. [In French. English and French summaries: pp. 54-55 of Summaries of Section Papers.] [Authors' summary modified.] **966**

Hens were fed a mash containing 0·04–0·013% nitrophenide for a period of 10 weeks. The drug appeared to be non-toxic for the hens, but 10% of the chicks hatched from their eggs developed malformed toes.

There were significant differences in the incidence of this deformity in different groups of birds, and the cause was not determined. A conc. of 0·013–0·019% of the drug did not reduce the death rate from coccidiosis, and although a conc. of 0·03–0·04% did so, deaths were not completely prevented, nor was the growth rate of survivors equal to that of non-infected non-treated control birds.

HERMAN, C. M., REEVES, W. C., MCCLURE, H. E., FRENCH, E. M. & HAMMON, W. MCD. (1954). **Studies on avian malaria in vectors and hosts of encephalitis in Kern County, California. I. Infections in avian hosts.**—*Amer. J. trop. Med. Hyg.* **3,** 676-695. **967**

Examination of blood from 8,674 birds representing 73 species, revealed species of *Plasmodium* in 88 individuals of 27 species. Seven species of *Plasmodium* were found, *Pl. relictum* occurring in 79% of infected birds. Twelve new host species were recorded. Inoculation of blood from wild birds into canaries led to the demonstration of many infections which had not been detected in blood smears from the donors.—JAS. G. O'SULLIVAN.

SALYAEV, V. A. (1954). **[Control of and immunization against equine piroplasmosis.]**—*Veterinariya, Moscow.* **31,** No. 3. pp. 38-40. [In Russian.] **968**

Immunization of horses against piroplasmosis can never entirely control the disease because the vector ticks remain infected for many generations. It is essential, therefore, to take all known measures till ticks are entirely eliminated, wholesale immunization of horses proceeding concurrently.—F. A. ABBEY.

PAICHADZE, B. V. (1954). **[Natural immunization of sheep against piroplasmosis on farms with separate summer and winter grazing.]**—*Veterinariya, Moscow.* **31,** No. 3. pp. 40-42. [In Russian.] **969**

In eastern Gruzia (Caucasus area) sheep are driven in spring from the low-lying winter pastures to high ground for summer pasturage. If the transfer takes place before ticks appear in large numbers, piroplasmosis is low in incidence, but the sheep are liable to heavy infection if next spring there is a delay in the transfer. Flocks that had been delayed for 15–20 days beyond the recognized time on their winter pastures became slightly infected, except the lambs and the older ewes, but subsequently acquired immunity or resistance. Flocks delayed still longer became dangerously infected.

P. suggested that all sheep should be allowed to become lightly infested with ticks, given treatment and then in each successive spring be kept on their winter pastures a little longer than necessary to allow of certain infestation by ticks; this, without causing the disease to affect the animals seriously, improves their resistance and allows them to acquire a natural immunity.—F. A. ABBEY.

DEOM, J. (1954). Echec de la thérapeutique à la nivaquine dans l'East Coast fever des bovidés au Ruanda-Urundi. **[Failure of nivaquine in treatment of East Coast fever.]**—*Bull. agric. Congo belge.* **45,** 149-156. [In French. Flemish summary.] **970**

In view of encouraging reports on the use of "nivaquine' (diethylamino-4-methyl-1-butylamino-4-chloro-7-quinoline) against *Theileria dispar* infection, D. tested it on 3 susceptible young bulls exposed to a natural attack of *T. parva*. All three died, one very rapidly after an accidental intravenous instead of intramuscular injection of the drug.—M. L. CLARKE.

MCDONNOUGH, L. T. (1954). **Observations on the treatment of field cases of anaplasmosis in Jamaica using the drug PAA-701.**—*Vet. Rec.* **66,** 512-514. **971**

M. stated that the probable recovery rate is only 40% when any one established drug is used. He found that PAA-701 ("camoform") at 0·4 g. per 100 lb. body wt. has a direct action on *Anaplasma marginale* in cattle: 26 out of 27 cases recovered, but long-standing cases were often also given established drugs. No action on *Babesia bigemina* was seen.

—D. POYNTER.

MÜHLPFORDT, H. (1953). Das Verhalten von *Toxoplasma gondii* (Stamm Bk_x) in der Gewebekultur. **[Behaviour of *T. gondii* in tissue culture.]**—*Z. Tropenmed. u. Parasit.* **4,** 53-64. **972**

When *T. gondii* isolated from human infection was cultured in fowl tissue culture, marked growth occurred, with rosette formation. The small form was found in the cytoplasm without a vacuole and the larger form in vacuoles: the nuclei had central karyosomes. Free parasites were actively motile. Pseudocyst formation was observed. There are 13 photomicrographs.—R. B. HOLCOMBE.

See also absts. **1223** (report, India); **1224** (report, Northern Rhodesia); **1225** (report, U.S.A.).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

McIntosh, K. S. (1953). **Foot and mouth disease. Precautions with migrants.** — *Health, Canberra.* **3,** 55-57. **973**

Precautions to prevent the introduction of F. & M. disease into Australia include disinfection (methods briefly described) of the personal belongings of all European migrants who have been associated with farming or farm products during the two months before embarkation.—R. I. Sommerville.

Pierot, M. (1952/1953). Les principes azotés et la fièvre aphteuse. **[Protein content of the food and resistance of cattle to foot and mouth disease.]**—*Bull. Soc. Sci. vét. Lyon.* **54** & **55,** 291-295. **974**

An exposition of a theory that the high protein content of a cattle-cake supplement encourages the growth of a latent virus, giving a severe form of disease which would otherwise be mild or inapparent. P. gave experimental evidence.—A. Seaman.

Maglione, E. & Ragni, M. (1954). Contributo allo studio della eredo-immunità nell'afta epizootica. **[Heredity of immunity to foot and mouth disease.]**—*Zooprofilassi.* **9,** 223-232. **975**

In calves newly vaccinated with Waldmann's vaccine the average rise in body temp. for those whose dams had been vaccinated was 0·30°C. as compared with 0·77°C. in those from non-vaccinated dams.—I. Martini.

Wehmeyer, P. (1954). **Variation in the composition of the blood in cows immunized against foot-and-mouth disease.**—*Acta path. microbiol. scand.* **34,** 591-602. [In English. Author's summary modified.] **976**

Three weeks after cows had been vaccinated against F. & M. disease, the serum protein concentration increased. This increase was higher in cows vaccinated with 60 ml. of vaccine than in cows vaccinated with 30 ml. In some cows the serum albumin conc. as well as the globulin conc. changed during the immunization. In one group of cows the increase in serum protein conc. was due to a rise in the globulin conc.

No change could be ascertained by electrophoresis of serum. On the other hand, in all the examined immune sera one or two extra components are observed on the negative side of the electrophoresis diagrams. On electrophoresis of serum from non-treated cows, these two peaks were difficult to see. Their mobility lay between the main component of the gamma globulin and the delta peak. The size of the immunizing dose played such a large role in the protein level (globulin level) that it seemed reasonable to assume that the aluminium hydroxide together with protein had a stimulating effect on the cells producing globulin. No relation could be demonstrated between the rise in the serum globulin conc. and the immunity obtained.

Gómez Oritz, E. (1952). El niño y el problema de la rabia humana en Colombia. **[Incidence of rabies in Colombia.]** — *Rev. colomb. Pediat.* **11,** 110-134. **977**

In Colombia rabies may be considered as endemic and official figures show that the incidence is particularly high among children. Rabies is transmitted to man mainly by rabid dogs and by foxes, though some data appear to indicate the possible existence of virus carriers among healthy dogs. The author urged the need for a campaign to prepare the way for mass vaccination, the impounding of stray dogs and the destruction of wild foxes. —I. Martini.

Ercegovac, D. T. (1953). **[Diagnosis of rabies using rats.]**—*Vet. Glasn.* **7,** 321-326. [In Serbian. German summary. Abst. from German summary.] **978**

E. recommended white rats for rabies diagnosis tests.—A.S.

Smith, C. E. G. (1953). **A red-green contrast stain for the routine demonstration of Negri bodies in brain-tissue sections.** — *J. Path. Bact.* **66,** 309-310. **979**

An account of a technique employing Zenker-acetic fixative, fast green FCF and Safranin O. After staining the cytoplasm and general background are grey or pinkish, microglial nuceli and nucleoli of nerve cells bright red, erythrocytes green with no vacuoles, and Negri bodies bluish green with characteristically arranged vacuoles.—A.S.

I. Zunker, M. (1953). Versuche zur Tollwutschutzimpfung von Hunden und ihre Bedeutung für die Seuchenbekämpfung. **[Immunization of dogs against rabies.]**—*Proc. XVth Int. vet. Congr., Stockholm,* 1953. Part I. Vol. 1. pp. 260-264. Discussion: Part II. pp. 221-226. [In German. English and French summaries.] **980**

II. Kodrnja, E. (1953). Die Prophylaxe der Tollwut. **[Prevention of rabies by immunization.]**—*Ibid.* Part I. Vol. 1. pp. 265-269.

Discussion: Part II. pp. 221-226. [In German. English and French summaries.] **981**

III. TIERKEL, E. S. & KAPLAN, M. M. (1953). **Advances in the control of rabies.**—*Ibid.* Part I. Vol. 1. pp. 270-278. Part II. pp. 219-226. [In English. French and German summaries.] **982**

I. [For abst. of Z.'s paper, see *V.B.* **24**, 1484]. In discussing his paper, Z. mentioned the partial failure of veterinary police measures to control the spread of rabies, the question of compulsory vaccination of all dogs, and the fact that 30% of 200 g. pigs died from rabies after he had inoculated them with avianized rabies vaccine.

II. [For abst. of K.'s paper, see *V.B.* **24**, 1483]. In part II of the *Proceedings* A. Stefanic supplemented K.'s paper by describing the anti-rabies campaign in Slovenia. Compulsory annual vaccination of dogs commenced in 1947.

III. A general account of recent work on the diagnosis, immunology, and control of rabies, with special reference to conditions in the U.S.A In Part II of the *Proceedings*, the safety and efficacy of avianized rabies vaccine was discussed.—R.M.

YAOI, H., MIKAMO, Y., OTANI, S., NAKAGAMI, S., NAKANO, M. & KONDO, A. (1950). **On a new anti-rabies vaccine, inactivated completely by merzonin and heat.**—*Yokohama med. Bull.* **1**, 15-25. [In English.] **983**

A highly potent vaccine was obtained by inactivation of the Nishigara strain of rabies fixed virus in rabbit brain by heat treatment after the addition of thiomersal ("merzonin").

(1) A 10% emulsion of brain material was centrifuged at 3,000 r.p.m. for 30 min., 0·1% thiomersal being added to the supernatant and heated for 3 days at 37°C. The resulting vaccine proved more potent than Pasteur, phenolized and formolized vaccines. (2) A further increase of potency was obtained by the use of crude brain emulsion, strained through gauze instead of being centrifuged: the virus was inactivated by 0·1% thiomersal and heating for 5 days at 37°C. The latter vaccine remained potent for at least 12 months at cold room temperature.

Some thousand persons, including 42 that had been bitten by rabid dogs on the face or elsewhere on the head were successfully treated with the latter vaccine (10 daily intradermal doses of 0·2 ml.). Antibodies which neutralized 100 LD_{50} in mice were present in the patients' blood on the 11th day, and there were maximal titres of 1,000 to 10,000 neutralizing antibodies by about the 15th day.

The authors stated that the thiomersal inactivation method was also applicable to the viruses of Japanese B encephalitis, influenza, dengue, vaccinia, and measles.—KOGI SAITO.

ANON. (1954). **Living virus vaccine in rabies control.** — *Chron. World Hlth Org.* **8**, 263-266. **984**

A report of the use of live vaccines (Flury and Kelev strains) in the control of rabies in Israel from 1950–53. Dog owners were required to register their dogs and have them vaccinated. Stray dogs were destroyed, suspected rabies cases were kept under observation in quarantine stations, and the number of jackals was reduced by putting down poisoned baits. Forty-four rabid dogs were reported in 1950, 8 in 1951, 10 in 1952, and 3 in 1953, one of the last being a vaccination failure.—A.S.

QUESADA, A. (1954). Ricerche sulla durata della validità dei vaccini antirabbici fenicati secondo Fermi. **[Keeping qualities of phenolized rabies vaccine.]**—*Atti. Soc. ital. Sci. vet., Cortina d'Ampezzo*, 1953. **7**, pp. 922-928. [English and French summaries.] Discussion: pp. 927-928. **985**

In tests on dogs vaccinated with phenolized vaccine prepared by the method described by Fermi, with subsequent challenge by the suboccipital injection of fixed virus, it was found that the keeping qualities of the vaccine did not exceed 90 days at 5°C.—I. MARTINI.

KODRNJA, E. (1954). Recherches expérimentales sur le sérum antirabique. **[Experimental study of rabies immune serum.]**—*Bull. Off. int. Epiz.* **42**, May, pp. 122-153. [English summary.] **986**

K. described the technique employed in preparing rabies hyperimmune serum in horse and sheep. Horse serum was found to be more potent than sheep serum. He tested the use of horse serum in 252 rabbits, 155 sheep and 72 horses with 246 control animals, and gave the results in tables. In all cases fixed virus was administered by intracerebral injection. Serum was effective only when administered before the challenge dose. When serum was administered 3–4 days before virus there was 55% clinical disease. The figures rose to 64% when the serum was given two days before challenge and to 67% one day before challenge. When serum was given simultaneously with the virus 88% of the animals developed rabies.—G. V. LAUGIER.

AHUJA, M. L., D'SILVA, C. B., BROOKS, A. G. & THOMAS, A. K. (1951). **Studies on rabies. VI. Antirabic serum and antirabic vaccine treatment: interpretation of results in laboratory animals.**—*Indian J. med. Res.* **39,** 433-444. [For previous parts, see *V.B.* **22,** 2470, 2805-2807; & **23,** 421. Part VII. *Ibid.* **24,** 4044.] **987**

The i/p or s/c administration of immune serum up to 24 hours after i/m inoculation of rabies virus prolonged the incubation period, but did not prevent death from rabies, in mice and g.pigs. Combined treatment with serum and a formalized vaccine appeared to be of little value. The s/c inoculation of vaccine on alternate days, commencing 2–8 days before infection with the virus, protected most g.pigs. The authors emphasized that the results of vaccination of mice and g.pigs cannot be compared with those obtained in human beings owing to the longer incubation period in the latter.

—K. C. SINHA.

SHOPE, R. E. (1954). **Infectious ectromelia of mice (mouse pox).**—*J. Lab. clin. Med.* **44,** 333-335. **988**

In autumn 1952 there were rumours that infectious ectromelia was present in certain mouse colonies in the U.S.A. A study group was set up under the auspices of the Research Grants Division of the National Institutes of Health to investigate the position in mouse colonies at research centres throughout the country, and to make recommendations. Infection was confirmed in 4 colonies.

S., who was a member of the study group, gave a general description of the disease with notes on prevention and control.—A.S.

HERZBERG, K. & KLEINSCHMIDT, A. (1954). Elektronenmikroskopische Untersuchungen am Kanarienpockenvirus. **[Electron microscopic examination of canary pox virus.]**—*Z. Hyg. InfektKr.* **139,** 545-560. **989**

The authors studied the virus of canary pox in smears of oedematous fluid from infected birds by electron microscopy. They described round, oval and rectangular elementary bodies of varying thickness.—R.M.

DOWNIE, A. W. & MACDONALD, A. (1953). **Smallpox and related virus infections in man.**—*Brit. med. Bull.* **9,** 191-195. **990**

This review article records the experience gained in recent outbreaks of smallpox in Britain, with special reference to those aspects which concern the laboratory investigator. In typical cases laboratory confirmation of the diagnosis is rarely needed. The authors tabulated the tests which may prove helpful at various stages in clinically doubtful cases. They gave a brief description of human infections with the virus of cow pox, and of "milker's nodules".—W. R. BETT.

MORGAN, C., ELLISON, S. A., ROSE, H. M. & MOORE, D. H. (1954). **Structure and development of viruses as observed in the electron microscope.** — *J. exp. Med.* **100,** 195-202. [Authors' summary slightly modified.] **991**

Herpes simplex virus was examined by the electron microscope in sections of infected chorioallantoic membrane of chick embryos. Removal of the embedding methacrylate from relatively thick sections permitted large numbers of viral particles to be seen but caused extensive alteration of cellular components as well as variable distortion of viral structure. This distortion was characterized by disruption of particles and loss of central bodies, resulting in ring or empty shell forms. An inner structure of the virus was revealed in ultra-thin sections from which the embedding plastic was not removed. The nuclei of infected cells contained small, dense, primary bodies (30–40 mμ diam.) as well as slightly larger and less dense particles (40–50 mμ diam.) surrounded by a single membrane (70–100 mμ diam.). In the cytoplasm most of the particles possessed a double outer membrane (120–130 mμ diam.). The authors suggested that the initial site of viral development is restricted to the nucleus where primary bodies form and become enclosed by a single outer membrane. Upon release into the cytoplasm these particles appear to acquire a second outer membrane and presumably represent the mature virus.

I. FINTER, N. B., LIU, O. C., LIEBERMAN, M. & HENLE, W. (1954). **Studies on host-virus interactions in the chick embryo-influenza virus system. VIII. An experimental analysis of various deembryonation technics.**—*J. exp. Med.* **100,** 33-52. [Authors' summary modified. For previous parts, see *V.B.* **20,** 90-92 & **22,** 3085 & 3086.] **992**

II. HENLE, W., LIU, O. C. & FINTER, N. B. (1954). **Studies on host-virus interactions in the chick embryo-influenza virus system. IX. The period of liberation of virus from infected cells.** — *Ibid.* 53-70. [Authors' summary modified.] **993**

I. The authors discussed the usefulness of de-embryonation technique in the study of various problems in the growth cycle of influenza virus in the entodermal cells of the allantois of chick embryos. The method readily per-

mitted repeated sampling of the medium at various stages after infection (cumulative growth curves) or frequent exchanges of the medium (differential growth curve). However, the yield of infectious virus or of haemagglutinins was less than that observed in the intact chick embryo. The difference observed was greater than could be accounted for by the reduction in the available host cells and was assumed, therefore, to be due in part to interruption of blood and nutrient supply to the cells. This handicap could be overcome by the combined *in ovo*-de-embryonation technique, in which de-embryonation was performed at any desired time after infection of the intact chick embryo; the medium was collected and analysed after one to 3 hours of further incubation. The value of the technique was demonstrated by the fact that liberation of virus from infected cells could be detected earlier than in the intact egg. Furthermore, it continued at a nearly constant rate for many hours, thus proving previous inference, which had been based upon *in ovo* experiments, to be erroneous. It also permitted the addition and subsequent removal of substances that might have interfered with viral propagation. As an example, a study was made of the effect of the receptor-destroying enzyme (RDE) of *V. cholerae* when added to the medium of eggs infected prior to de-embryonation. By carefully grading the dose of virus and using an appropriate amount of RDE, one-step growth curves were obtained indicating that those cells not directly invaded by the seed virus were subsequently protected against infection by action of the enzyme. The smaller the amount of virus the less RDE was required in order to note a protective effect. With a decrease in the period of exposure to RDE regeneration of cell receptors became increasingly more apparent, in that correspondingly greater amounts of virus were produced and liberated late in the incubation periods.

II. The authors studied the period and rate of liberation of influenza virus from entodermal cells of the allantois by de-embryonating eggs within a few minutes after infection, exchanging the medium thereafter at hourly intervals, and by assaying the virus concentration in the harvests thus obtained (differential growth curves). If the inoculum was sufficiently large, presumably all available cells immediately became infected and only one infectious cycle was expected to occur. If the inoculum was small, so that only a fraction of the cells adsorbed virus, the infectious process was held to one cycle by continuous exposure of the remaining susceptible cells to receptor-destroying emzyme. In either case, the results obtained indicated that once cells had been infected they produced and liberated virus at nearly constant rates for periods of 30 hours or longer before the yields decreased rapidly. Such prolonged periods of liberation were observed not only in de-embryonated eggs but probably occurred also in the intact chick embryo. The authors attemped to reconcile these findings with previous estimates of the liberation period and to integrate them with histological observations and electron micrographs of thin sections of infected allantoic membranes having a bearing on the mode of liberation.

GOTTSCHALK, A. (1954). **The influenza virus enzyme and its mucoprotein substrate.**—*Yale J. Biol. Med.* **26,** 352-364. **994**

G. discussed the agglutination of erythrocytes by influenza virus at 0°C. and the spontaneous irreversible elution of the virus from the erythrocytes at 37°C. In explaining this and other phenomena he developed at some length the theory that the cell wall possesses receptors which are attacked by an enzyme from the virus, and discussed work which had been done to elucidate the chemical structure of the receptors and of the enzymes which attack them.—A.S.

GREIFF, D., BLUMENTHAL, H., CHIGA, M. & PINKERTON, H. (1954). **The effects on biological materials of freezing and drying by vacuum sublimation. II. Effect on influenza virus.**—*J. exp. Med.* **100,** 89-101. **995**

The authors determined the effect of a number of procedures on the infectivity titre of influenza virus. Among the procedures were repeated freezing and thawing, freezing at various rates followed by storage at various temperatures, and freezing at various rates followed by dehydration at various temperatures to various degrees of dehydration. Five freeze-thaw cycles produced a fall in infectivity titre from $10^{-8.6}$ to $10^{-0.8}$, the 2nd, 3rd and 4th cycles producing a much greater drop in infectivity than the 1st and 5th cycles. The effects of freeze-drying depended on preliminary treatment and the dehydration temperature. Dehydration at 0°C. and 80°C. had the least effect on infectivity. Intermediate temperatures were more destructive.—A.S.

O'CONNOR, J. R. & MORRIS, J. A. (1954). **Recovery of Texas-1 type Coxsackie virus from the blood of wild rabbit and from sewage**

contaminating rabbit's feeding ground.—*Fed. Proc.* **13,** 507-508. [Only abst. given. Abst. from abst.] **996**

Eighteen cottontail rabbits were trapped on a nature reserve, and diluted samples of the blood tested by intracerebral inoculation into unweaned mice. One of the samples was fatal to the mice, and proved to contain Texas-1 strain Coxsackie virus. The same virus was isolated from a septic tank draining into the field where the infected rabbit was caught.

—A.S.

Miles, J. A. R. (1954). **Infection of birds with Murray Valley encephalitis (X disease).** —*Aust. J. exp. Biol. med. Sci.* **32,** 69-78. **997**

Domestic fowls, homing pigeons, Indian doves (*Streptopelia sirratensis*), domestic ducks, silver gulls (*Larus novaehollandiae*), and a magpie (*Gymnorhina hypoleuca*) were inoculated intracerebrally, intramuscularly or intradermally with the virus of Murray Valley encephalitis. Provided that the dose of virus injected was sufficient to infect the birds, the dose and route of inoculation did not greatly affect the amount of virus in the blood or the duration of the viraemia.

The adult cockerel developed viraemia less regularly than any other bird tested and appeared to be less easily infected than Indian doves or pigeons. In 14-day-old chicks however, viraemia was produced regularly. Viraemia in pigeons lasted only 24–48 hours, but was of longer duration in Indian doves, ducks, silver gulls and a white backed magpie. M. suggested that these birds with the long viraemia are the ones of epidemiological importance.

For inter-epidemic surveys of bird sera he recommended the neutralization test, but during an epidemic both complement-fixation and c.f. inhibition tests should also be included.

Efforts to isolate virus from biting lice (*Ostemenopon* sp.) which had fed on birds with viraemia were not successful.—K. G. Johnston.

Reagan, R. L., Delaha, E. C., Stewart, M. T. & Brueckner, A. L. (1954). **Effect of Semliki Forest virus and Bunyamwera virus in the cave bat** (*Myotus lucifugus*). — *Cornell Vet.* **44,** 298-301. **998**

Cave bats were found to be susceptible to Semliki Forest and Bunyamwera viruses inoculated by various routes. They developed nervous symptoms.—A.S.

Hruška, K. & Blažek, K. (1954). Příspěvek k upotřebení králika jako pokusného zvířete pro laboratorní diagnostiku infekční anaemie koní. [**Use of rabbits in the diagnosis of equine infectious anaemia.**]—*Vet. Čas.* **3,** 32-41. [In Czech. German and Russian summaries.] **999**

Rabbits were injected with blood from a horse with equine infectious anaemia, followed in a few cases by phenylhydrazine hydrochloride four days later. This drug is said to have a synergistic effect on the virus. In those injected with infective blood alone, a slight and transient decrease in the erythrocyte count was observed while the haemoblobin level remained unaffected. It was doubtful whether this effect was specific. The drug by itself lowered the erythrocyte count considerably and produced a haemosiderosis of the liver. It is, therefore, unsuitable as an aid in the diagnosis of E.I.A.

—A. Mayr-Harting.

Schmidt, D., Potel, K., Pehl, K-H. & Gralheer, H. (1954). Untersuchungen zur Pathogenese der infektiösen Anämie der Pferde. [**The pathogenesis of equine infectious anaemia.**]—*Arch. Exp. VetMed.* **8,** 83-113. **1000**

The authors infected 10 horses by the inoculation of infective serum, and followed the course of infection by haematological and clinical examinations, and by biopsy on bone marrow, liver and spleen. Comparison was made with 6 'control' horses, 2 of which received normal horse serum i/v, and 4 a killed suspension of *Bact. coli*. From their observations they concluded that the condition is a haemolytic-hypoplastic anaemia. They discussed the mechanism of the observed blood changes, which they regarded as being of a secondary and defensive nature. In support of this they pointed out that there were haemolytic changes in the horses which received a killed suspension of *Bact. coli*, though the suspension *in vitro* showed no haemolytic activity. This they considered likewise to be a secondary phenomenon, resulting from the release of haemolytic substances as by-products of the host-antigen reaction.—A.S.

Potel, K. (1952). Zur Histopathologie der infektiösen Anämie des Pferdes. I. Das endokrine System. II. Das Zentralnervensystem. [**Histopathology of equine infectious anaemia. I. Endocrine system. II. Central nervous system.**] — *Arch. exp. VetMed.* **6,** 118-131 & 132-149. **1001**

I. P. examined the thyroid, thymus, pituitary, pineal, and adrenal glands and the pancreas, ovaries or testicles of 130 horses which had died from equine infectious anaemia.

Lymphocytic infiltration was observed in the pituitary and adrenal glands. Pathological changes in the other organs were, in general, slight.

II. Lesions of the c.n.s. in the same 130 horses were mainly the result of stimulation of the reticulo-endothelial system or of disturbances in the blood supply. Perivascular oedema and haemorrhage were present. Inflammatory or degenerative changes were often present in the cerebral cortex.

[For Part III, see *V.B.* **24**, 3494]—R.M.

FORTNER, J. & ULBRICH, F. (1954). Etat actuel de nos expériences sur la transmission de l'anémie infectieuse des équidés à des petits animaux d'expérience. **[Susceptibility of laboratory animals to the virus of equine infectious anaemia.]**—*Bull. Off. int. Epiz.* **42**, May, pp. 737-742. **1002**

The authors attempted unsuccessfully to effect serial passage of the virus of equine infectious anaemia in rabbits, white mice, and g. pigs. They are continuing their researches.

—A.S.

BARTHA, A. (1954). Adatok a kancák vírusokozta elvetélésének ismeretéhez. **[Equine virus abortion.]**—*Mag. állator. Lapja.* **9**, 296-297. [English and Russian summaries. Abst. from English summary.] **1003**

B. prepared an antigen from ether extracts of the lungs and liver of aborted foetuses from mares with virus abortion. Using this antigen in the complement-fixation test, he was able to detect antibodies in the serum of infected horses. Antibodies first appeared in the serum 10–18 days after artificial infection.—R.M.

RANDALL, C. C. (1954). **Propagation of equine abortion virus in tissues of other animals.**—*Fed. Proc.* **13**, 441. [Only abst. given. Abst. from abst.] **1004**

R. attempted to grow equine abortion virus in a number of tissue cultures at 37°C., using the formation of inclusion bodies as an indication of growth. Initially some growth was obtained in tissues from embryonic cats and hamsters, and from day-old hamsters, dogs and rabbits, but passage was possible only in embryonic cat and hamster tissue.—A.S.

FUKUSHO, K., ISHII, S. & TAKAMOTO, H. (1953). **Comparative study on infectiosity to rinderpest of Japanese black and Holstein-Friesian cattle with complement fixation reaction.** — *Exp. Rep. Govt. exp. Sta. anim. Hyg., Tokyo.* No. 26. pp. 35-39. [In English.] **1005**

Using complement-fixation tests the authors studied the relative susceptibility to rinderpest of the Japanese black breed and of the Friesian breed of cattle. A higher titre of antigen in the tissues of infected animals and also a higher titre of antibody in convalescent animals was considered to confirm clinical evidence that the Japanese black breed is more susceptible to rinderpest than the Friesian breed.

—KOGI SAITO.

SWAN, J. F. C. (1953). **Notes on the first rinderpest vaccinations in Northern Rhodesia.** —*Bull. epiz. Dis. Afr.* **1**, 282-286. [In English and French.] **1006**

Owing to the deterioration in the rinderpest situation in Tanganyika in 1938 and 1939 preparations were made for mass vaccination in Northern Rhodesia towards the end of 1939. Vaccination commenced on the 1st January 1940 was repeated at the end of the year and again the following year.—W. S. MARSHALL.

SHARMA, R. M. & RAM, T. (1953). **Vaccination of goats against rinderpest with glycerinised goat tissue virus vaccine.** — *Indian vet. J.* **29**, 321-327. **1007**

Spleen from goats infected with goat-passaged rinderpest virus preserved in glycerol at 0°C. for up to 96 hours caused as severe reactions as those with non-glycerolated spleen and could not be recommended as a safe vaccine for goats and sheep.—R. N. MOHAN.

WENNER, H. A., MENGES, R. W. & HARSHFIELD, G. S. (1954). **Sporadic bovine encephalomyelitis. III. Reproduction of the disease, with particular reference to the role of poliomyelitis viruses in experimental infection in calves.**—*J. infect. Dis.* **94**, 284-296. [Authors' summary modified. For previous parts, see *V.B.* **23**, 1907 & 1908.] **1008**

The authors confirmed their previous observations that a virus belonging to the psittacosis-lymphogranuloma venereum group of viruses (BE virus) was the cause of sporadic bovine encephalomyelitis. A virus related to the Lansing strain of poliomyelitis, which they isolated from chick embryos infected with BE virus, failed to cause apparent or occult illness in experimental calves. Corresponding results were obtained in calves inoculated with known Type 2 strains of poliomyelitis virus. Calves inoculated with poliomyelitis viruses were not immune to challenge with BE virus. The data indicated that poliomyelitis viruses were aetiologically unrelated to sporadic bovine en-

cephalomyelitis. They have not yet confirmed an antigenic relationship among these two groups of viruses.

ISHII, S. (1953). **[General review on so-called epidemic fever of cattle.]**—*J. Jap. vet. med. Ass.* **6,** 261-264. [In Japanese.] **1009**

The Research Committee of the Japanese Veterinary Medical Association had decided that the disease of cattle previously referred to as "bovine influenza" should be named epizootic fever of cattle. The author discussed the results of several years' studies on the disease, some of which have already been abstracted [*V.B.* **24,** 423, 1106, 2350–2352, 2741, 2742 & 4053]; he concluded that:—Two distinct viruses are involved: the one isolated by Tsubaki, the other isolated by the Government Experiment Station for Animal Hygiene. Because the latter virus belongs to the psittacosis-lymphogranuloma group, he suggested that the disease caused by that virus should be distinguished from so-called epizootic fever of cattle; he proposed the name "miyagawanellosis of cattle". —KOGI SAITO.

JACKSON, S. L. (1954). **Infectious keratoconjunctivitis of cattle.**—*Vet. Med.* **49,** 260-261. **1010**

Treatment of pinkeye with a 1% chloramphenicol ophthalmic ointment, applied locally daily for 3–9 days, was effective in curing 110 Hereford cattle.—A. ACKROYD.

TAKEMORI, N., NAKANO, M., HEMMI, M., IKEDA, H., YANAGIDA, S. & KITAOKA, M. (1954). **Destruction of tumour cells by Rift Valley fever virus.** [Correspondence.]—*Nature, Lond.* **174,** 698-700. **1011**

Rat and mouse sarcoma tissues growing *in vitro* were destroyed in a few days by Rift Valley fever virus inoculated into the nutrient fluid. Several other [unnamed] neurotropic viruses had no destructive effect on the tissues under the same conditions.

When injected s/c into mice simultaneously with ascitic fluid which, injected alone, caused the development of s/c tumours, the virus inhibited tumour formation.

Also, when injected i/p into mice in which ascitic tumour formation had been initiated by i/p inoculation with ascitic fluid, it destroyed the tumour cells, and after a few days ascitic fluid could no longer be obtained from the mice. Controls, which were not inoculated with the virus, died from tumours.

The tumour-destroying action of the virus was neutralized by pretreatment with immune serum.—A.S.

SCHWARTE, L. H. & MATHEWS, J. (1954). **Transmission of hog cholera via the respiratory tract.**—*N. Amer. Vet.* **35,** 671-672. **1012**

The authors prepared dried defibrinated serum from the blood of a pig with swine fever and introduced this, either in powder form, or in a frothy aqueous suspension, into the nasal cavities of four pigs. All developed swine fever. In another experiment two pigs developed the infection after the serum in powdered form had been introduced directly into the trachea posterior to the larynx.—A.S.

PALLASKE, G. (1954). Zur Frage von Leberveränderungen bei der Schweinepest. **[The question of liver lesions in swine fever.]**—*Dtsch. tierärztl. Wschr.* **61,** 365-366. **1013**

P. described the interlobular cellular infiltrations and other liver changes sometimes seen in pigs with swine fever. Since similar changes are sometimes seen in pigs with other diseases they cannot be considered specific. P. considered however that they were sufficiently common in swine fever to be of some diagnostic interest.—A.S.

SAUTTER, J. H., YOUNG, G. A., LUEDKE, A. J. & KITCHELL, R. L. (1954). **The experimental production of malformations and other abnormalities in fetal pigs by means of attenuated hog cholera virus.** — *Proc. 90th Ann. Meet. Amer. vet. med. Ass.* Toronto, July 20-23, 1953. pp. 146-150. [Authors' summary modified.] **1014**

The authors reproduced in foetuses oedema similar to that occasionally seen in new-born pigs by injecting modified live swine fever viruses into the dams, 14–16 days after mating. The most common abnormalities noted were ascites and generalized subcutaneous oedema. Other abnormalities were oedema of the mesocolon and perirenal tissues, increased amounts of fluid in the pleural and pericardial tissues, mottling of the liver, asymmetry of the head, lengthening and twisting of the snout and malformations of the limbs. Histopathological studies of these foetuses have not yet been completed.

The presence of abnormal foetuses in litters from dams having four different immunization histories suggested that the pre-breeding treatment (immunization history) of the dams was connected with the development of abnormal foetuses.

POPOVIĆ, B. & ERCEGOVAC, D. (1953). **[Evaluation of lapinized swine fever vaccine.]**—*Vet.*

Glasn. **7,** 193-198. [In Serbian. Abst. from English summary.] **1015**

The authors confirmed, in a small-scale experiment, the immunizing value of lapinized swine fever vaccine of American origin.—R.M.

Patočka, F., Kubelka, V. & Boháč, J. (1953). Příspěvek k imunologii nakažlivé obrny vepřů (encephalomyelitis enzootica suis). [**Immunology of Teschen disease.**] — *Československ. hyg. epid. mikrobiol.* **2,** 22-43. [In Czech. English and Russian summaries.] **1016**

A report on studies of immunization against Teschen disease. The virus must be alive; if given intramuscularly it is fairly harmless, but still actively immunogenic. A fairly high degree of immunity may be obtained by using a suspension of the infective spinal cord, but the addition of a stabilizing lipoid adjuvant produces a higher and much longer lasting immunity. Using 2 ml. of a 10% suspension of infective spinal cord, emulsified in 1·5 ml. liquid paraffin, stabilized with 2 ml. lanolin or 'falba' (a lanolin-like substance), two injections were given with one month interval. In field experiments involving about 3,000 pigs satisfactory results were obtained, although after the first injection of vaccine occasional paralytic complications occurred. None of the immunized animals, not even those with paralytic symptoms, excreted the virus. Neutralizing antibodies in the serum can be produced by hyperimmunization, but the titre remains very low. The question of possible multiplicity of antigenic types must be settled before active immunization is considered as a practical proposition. As far as investigated by the authors only one antigenic type was found. In analogy to poliomyelitis, γ-globulin prepared from hyperimmune serum is effective as a prophylactic and does not interfere with any active immunization running its course at the same time. The authors suggested the simultaneous injection of γ-globulin—but into a different site—with the first injection of the vaccine to prevent paralytic complications. Transfer of immunity from the mother to the young could not be established.—A. Mayr-Harting.

Bankowski, R. A., Keith, H. B., Stuart, E. E. & Kummer, M. (1954). **Recovery of the fourth immunological type of vesicular exanthema virus in California.**—*J. Amer. vet. med. Ass.* **125,** 383-384. **1017**

The authors had previously described three serologically distinct types (A, B, and C) of vesicular exanthema virus [*V.B.* **24,** 760]. Recently they isolated a fourth type from an outbreak of the disease amongst pigs in California, which they named type D.—R.M.

Brooksby, J. B. (1954). Etude expérimentale de l'exanthème vésiculeux. [**Experimental study of vesicular exanthema.**]—*Bull. Off. int. Epiz.* **42,** May, pp. 368-377. [English summary.] **1018**

B. gave an account of cross-immunity tests which revealed the existence of 5 strains of vesicular exanthema virus. He described variations in clinical symptoms between strains. He found that immature white mice are not susceptible to the disease. He confirmed that the complement-fixation test, using serum from hyperimmunized pigs, can be used for diagnosis and discussed its use in type differentiation and differential diagnosis.—G. V. Laugier.

McClain, M. E., Madin, S. H. & Andriese, P. C. (1954). *In vitro* **cultivation and cytopathogenicity of vesicular exanthema virus.** —*Proc. Soc. exp. Biol., N.Y.* **86,** 771-774. [Authors' summary modified.] **1019**

An agent capable of producing typical vesicular exanthema in pigs was propagated through 16 passages in a pig embryo tissue culture system. In the course of these passages the original material was diluted to 10^{-19}, so that it is highly unlikely that any infective material from the original inoculum was carried through all 16 passages. Multiplication of this agent in tissue culture was accompanied by extensive degeneration of epithelial cellular outgrowths which thus provided a simple means for *in vitro* assay of this virus. Considerable investigation is still required to determine the sensitivity and reliability of the system of tissue culture assay, whether in pig embryonic tissues or adult tissues such as kidney epithelium. Preliminary experiments indicated that plaque formation on pig kidney epithelium using the method of Dulbecco is feasible.

The authors obtained the following evidence that the cytopathogenic agent was in fact the B type of the virus of vesicular exanthema: (1) It produced clinical vesicular exanthema in pigs with subsequent immunity to challenge with known B type virus, without loss of susceptibility to injection with the A type virus. (2) Specific complement fixation was obtained when tissue culture agent was mixed with serum from g. pigs hyperimmunized with B type virus, but not when mixed with serum from g. pigs hyperimmunized with the A type. (3) Neutralization of the cytopathogenic effect was observed in

tissue culture when the agent was mixed with B type immune pig serum but not when mixed with A type antiserum.

RÖHRER, H. (1954). Das heutige Problem der Schweinepest und Schweinelähme in der Deutschen Demokratischen Republik. **[Swine fever and Teschen disease in the (East) German Democratic Republic.]** — *Mh. VetMed.* **9**, 496-502. **1020**

A discussion on the position with regard to swine fever and Teschen disease in Eastern Germany, and on the control measures taken. —A.S.

BINDRICH, H. (1954). Beitrag der Wesen der Staupevirusinfektion des Hundes und zu ihrer Bekämpfung. I. II. **[Dog distemper and its control. I. II.]**—*Arch. exp. VetMed.* **8**, 131-162 & 263-315. **1021**

I. Distemper virus was maintained in puppies by intramuscular injection for 96 passages, producing the catarrhal form of the disease, whereas intrathecal inj. of infected c.s.f., maintained for 154 passages, and intracerebral inj. of brain material, maintained for 73 passages, resulted in production of the nervous form. Proof that nervous symptoms were due to the specific action of the virus was obtained by neutralizing infective c.s.f. with the aid of distemper antiserum. By this method it was also possible to identify serologically the antigen contained in the c.s.f.

All methods of infection resulted in septicaemia and there was multiplication of the virus in the organs. Histologically there were no lesions in nervous tissues. The virus used in these experiments was regarded therefore as organotropic and not neurotropic. A shortening of the incubation period was observed which indicated an increase in virulence.

II. Details were given of serological examination of 3,519 organs from 1,292 experimentally infected puppies. As a rule the virus was present in blood, spleen, brain, intestinal lymph nodes and bone marrow after the first fever peak, whereas in the urine it generally appeared later. The virus was also present in the c.s.f. of puppies with "catarrhal" distemper, but only in the brain of those with "nervous" distemper was there a constant titre of 1:1,000,000.

Ferrets were highly susceptible to intracerebral, intraperitoneal and subcutaneous infection. B. stated that he had carried out 14 passages in mice and 12 in embryonated eggs. In rabbits and rats the virus is stated to survive in the body for a time, but not to multiply.

The virus was well preserved by freeze-drying, optimum pH was 7·0. Inactivation of the virus by formol, adsorption on aluminium hydroxide, purification with ether, chloroform, acetone, protamine and by centrifugation were studied.

A formolized adsorbate vaccine prepared from brain material of virus-passage puppies, conferred immunity lasting a minium of 3 months when given in 2 doses of 5 ml. each at an interval of 18 days.

Some of the author's work contained in this paper has already been published as separate articles [*V.B.* **22**, 3096 & 3713; **23**, 114; **24**, 1503, 3145 & 3146].

There is a very useful bibliography list giving 288 references.—E.G.

LARIN, N. M. & HODGMAN, S. F. J. (1954). **Gamma globulin prophylaxis of canine virus distemper.**—*Vet. Rec.* **66**, 549-550. [Authors' summary modified.] **1022**

Field trials showed that the specific activity of purified distemper antibody in the form of vacuum-desiccated γ-globulin was very high. Moreover, immune γ-globulin had the following distinct advantages over distemper antiserum:—(1) The use of immune γ-globulin minimized the danger of transmitting canine hepatitis virus which might be present in the antiserum. Gamma globulin contains no preservative and, therefore, it could be intravenously inoculated if required. (2) Vacuum-desiccated γ-globulin, sealed in ampoules under vacuum, could be stored in a dark place at room temp. much longer than antiserum. The storage of γ-globulin at 37°C. did not affect the preparation. (3) Gamma globulin could be made bivalent, *e.g.* active against both canine distemper and hepatitis viruses, or even polyvalent, *e.g.* active against the above viruses and those bacteria often complicating distemper. (4) Gamma globulin was 10 times the conc. of the antibody, compared with antiserum. One dose of desiccated γ-globulin, equivalent to 10 ml. antiserum,, could be easily dissolved in as little as 1 ml. distilled water. This simplified the use of the preparation as compared with antiserum. (5) From the point of view of production the cost was comparable with that of antiserum because the vol. of antiserum used was reduced 10 times at the beginning of the process. This simplified all further stages of production.

MANTOVANI, A. & ZIMARINO, E. (1954). Vaccino avianizzato contro il cimurro del cane. **[An**

avianized canine distemper vaccine.]—*Vet. ital.* **5,** 128-132. [English, French and German summaries.] **1023**

An avianized canine distemper vaccine was prepared from suspensions of chorio-allantoic membranes in skim milk. It protected puppies against experimental and natural infection.

—T. E. Gatt Rutter.

Moulton, J. E. & Brown, C. H. (1954). **Antigenicity of canine distemper inclusion bodies as demonstrated by fluorescent antibody technic.**—*Proc. Soc. exp. Biol., N.Y.* **86,** 99-102. [Authors' summary modified.] **1024**

Distemper inclusion bodies in urinary bladder epithelium were specifically stained with fluorescein-antibody conjugate. The authors concluded that these inclusion bodies contained viral antigen.

Kapp, P. (1954). Az ebek fertözö májgyulladása. [**Occurrence of canine virus hepatitis in Hungary.**]—*Mag. állator. Lapja.* **9,** 259-266. [English and Russian summaries.] **1025**

K. observed canine virus hepatitis in 4 dogs in Budapest. He passaged the virus in 34 dogs, 25 of which died from the disease.—R.M.

Schilling, S. J. (1954). **Notes on infectious canine hepatitis.** — *N. Amer. Vet.* **35,** 199-203. **1026**

S. discussed the extent to which dogs in the U.S.A. are infected with canine virus hepatitis (CVH) and their susceptibility to infection. He referred to the variable nature of the symptoms and to variations in the protective value of available antiserum. He had found that simultaneous injection of the virus with distemper and CVH antisera gave good results in puppies.—W. S. Marshall.

Anon. (1954). **Canine infectious hepatitis—fox encephalitis. [Committee report.]**—*J. Amer. vet. med. Ass.* **124,** 214-216. **1027**

A concise account of the aetiology, epidemiology, clinical features, pathology, diagnosis, prevention, and treatment of canine virus hepatitis.—A.S.

Stünzi, H. (1954). Weitere Beobachtungen bei der experimentellen Hepatitis contagiosa canis. [**Further observations on experimental canine virus hepatitis.**] — *Dtsch. tierärztl. Wschr.* **61,** 406-608. **1028**

S. described the course of infection in 50 dogs inoculated s/c or i/v with the virus. Fever developed between the 2nd and 5th days and lasted 3–7 days, with a marked drop in the middle of the period. Fever was accompanied by leucopenia and followed by leucocytosis lasting 2–3 days. The blood sedimentation rate was more rapid during fever. He noted the frequency of inclusion bodies at various stages of infection, and described kidney lesions.

—A.S.

Placidi, L. & Santucci, J. (1954). Observations épidémiologiques sur la maladie de Newcastle. Évolution de l'infection dans un parc zoologique. [**Epidemiology of Newcastle disease in a zoological garden.**]—*Bull. Acad. vét. Fr.* **27,** 255-258. **1029**

An account of an epidemic which destroyed 1,200 out of 1,400 fowls, 3 pheasants, 3 guinea fowls and 2 pigeons. Finches, birds of prey, and psittacine birds were not affected.—A.S.

Fortner, J. (1952). Die Selbstentseuchung des Hühnerpeststalles. [**Duration of infection in fowl houses of Newcastle disease.**]—*Arch. exp. VetMed.* **6,** Suppl. pp. 110-113. **1030**

Chemical disinfection of poultry houses after Newcastle disease is difficult and more use should be made in practice of the fact that the virus becomes non-infective in summer 7 days, in spring 14 days and in winter 30 days after removal of infected stock.—W. G. Siller.

Bonaduce, A. (1954). Ricerche sulla presenza e sul comportamento degli anticorpi inibenti l'emoagglutinazione nell'umor acqueo di conigli inoculati con infravirus pseudo-pestoso aviare. [**Behaviour of the haemagglutination-inhibiting antibodies in the aqueous humour of the eye in rabbits experimentally infected with the virus of Newcastle disease.**]—*Nuova Vet.* **30,** 176-179. **1031**

Following the inoculation of amnio-allantoic fluid containing Newcastle disease virus into the anterior chamber of the eye (or intravenously), rabbits manifested no clinical symptoms, but haemagglutination-inhibiting antibodies were demonstrable in the blood serum.

—I. Martini.

Negri, R., D'Amore, A. & Ravaioli, L. (1953). Infezione da virus di Newcastle. [**Infection by Newcastle disease virus in man.**]—*R. C. Ist. sup. Sanit.* **16,** 183-192. [English summary.] **1032**

Newcastle disease virus was isolated from the blood of a girl affected by an influenza-like illness accompanied by intense photophobia and headache. The same virus was recovered from sick fowls which lived (and moved freely around) in the same apartment. Cross hae-

magglutination-inhibition tests revealed that the two strains were closely similar, if not identical. —I. MARTINI.

AGCANAS, P. B. & RIGOR, T. V. (1951). **Effect of the Mukteswar strain of avian pest vaccine on layers : observations.**—*Philipp. J. Anim. Ind.* **12,** 19-25. **1033**

The authors observed a decrease in egg production of 10–16% between the 6th and 11th days after vaccination with the Mukteswar strain of Newcastle disease virus in 842 laying hens.—R.M.

BALDUCCI, D., CURCIO, F. & ROLLI, G. (1954). Action des adjuvants sur l'activité des vaccins contre le virus de Newcastle. **[Adjuvant vaccines for Newcastle disease.]**—*Ann. Inst. Pasteur.* **87,** 471-475. **1034**

The authors prepared an emulsified killed-vaccine, which they used with two commercial adjuvants. It was superior to a vaccine adsorbed on aluminium hydroxide.—A.S.

WALKER, R. V. L. & MCKERCHER, P. D. (1954). **Studies in Newcastle disease. VIII. The effect of refrigerator and room temperature on inactivated virus incorporated with adjuvants.**—*Canad. J. comp. Med.* **18,** 109-110. **1035**

Newcastle disease inactivated with formal and incorporated in "falba" (a lanolin-like substance) and mineral oil retained sufficient potency, for at least 600 days, either at room temp. or in the refrigerator, to protect adult fowls inoculated with it.—R. GWATKIN.

SCHNEIDER, B. (1954). Immunität und Antikörpergehalt bei gegen atypische Geflügelpest vaccinierten Hühnern. Eine orientierende Untersuchung zweier Immunisierungsmethoden. **[Immunity and antibody titre in fowls vaccinated against Newcastle disease.]** —*Vet.-med. Nachr.* No. 2, 65-83. [Summaries in Suppl. No. 2-1954. English summary: p. 6. French summary: p. 18. Spanish summary: p. 32.] **1036**

Four days after Newcastle disease adsorbate vaccine was administered immunity was demonstrable and lasted 6–9 months after a second injection. A Hertfordshire strain of low virulence produced a high antibody titre and no carriers and is a satisfactory vaccine for 12-week-old cockerels but pathogenic to 4-week-old chicks.—W. G. SILLER.

JOHNSON, E. P., RICH, C. I., ADAIR, D. R. & GROSS, W. B. (1954). **Studies in labeling the B_1 Newcastle disease virus with radio-active phosphorus.** — *Cornell Vet.* **44,** 465-474. [Authors' summary modified.] **1037**

The experiments described were undertaken to determine the fate of strain B_1 Newcastle disease virus in the chick when administered in the form of a spray and whether relatively small amounts, by reaching the air sacs, would account for a reaction of estimulate a detectable response. Radio-active phosphorus (P^{32}) was chosen because phosphorus is utilized in nucleoprotein metabolism, is highly sensitive to modern counting equipment, and presents minimal hazards around the laboratory. The virus was mixed with the isotope and incubated for 30 min. before the mixture was inoculated into 10-day-old chick embryos by the allantoic route. A post-inoculation period of 48 to 52 hours' incubation allowed the isotope to be incorporated into the virus during its growth in the embryo. The virus in the harvested allantoic fluid was purified by three cycles of alternate low- and high-speed centrifugation and washing in Ringer's solution. A comparison of the radio-activity in the final pellets containing the virus with that in control allantoic fluid without the virus, as well as testing for haemagglutinating activity with chicken r.b.c. and LD_{50} infectivity determinations in embryonated eggs, established the presence of the labelled virus and its titre.

Fractionation according to the method described by Schneider (1945) for the separation of the acid-soluble phosphorus, the phospholipoids, the ribonucleic acid and the desoxyribonucleic acid factors, yielded no correlation between the amount of phosphorus present and the radio-activity or biological activity of each. Radio-activity determinations on ashed trachea, lung, and air sac, removed from chicks within 30 min. after nebulization with the purified, labelled virus, revealed the presence of the virus in the abdominal air sacs in small amounts. The results indicated that comparatively few virus particles need to reach the respiratory epithelium in order to stimulate a measurable response.

DELAHA, E. C., REAGAN, R. L., COOK, S. R. & BRUECKNER, A. L. (1954). **Transmission of the avian infectious bronchitis virus to the cynomolgus monkey.**—*Cornell Vet.* **44,** 433-436. [Authors' summary modified.] **1038**

Allantoic fluid from chick embryos infected with infectious bronchitis was instilled into the nasal passages of two young cynomolgus monkeys [*Macaca cynomolgus*]. Eight days later one animal developed severe respiratory symptoms. On the 2nd day of illness nasal

washings were taken and after antibiotic treatment they proved to be fatal for 10% of the total inoculated embryonated eggs. On the 10th day after infection the monkey died, and autopsy revealed a small area of consolidation in the lower lobe of the right lung. All other organs appeared normal. Allantoic fluid was collected from the inoculated eggs that died. It was pooled and tested for sterility. Two more egg passages were conducted, and the mortality rate of the embryos increased to 20%. Three chickens were then inoculated into the trachea with the egg material from the third passage, and in 5 to 7 days they showed symptoms of infectious bronchitis. This verified the fact that the agent isolated from the infected monkey was the same infectious bronchitis virus with which it was injected.

WATANABE, M. (1952). **Avian infectious diarrhoea. I. Clinical, hematologic and histopathologic findings. II. Transmissible experiments and isolation of causative agent.**—*Jap. J. vet. Sci.* **14**, 263-268 & 269-275. [In English. Japanese summary.] **1039**

W. summarized the results of previous studies on an infectious diarrhoea of fowls in Japan [*V.B.* **24**, 2769-2774] and gave an account of the histopathology in fowls infected by contact. Degeneration of the epithelium of the convoluted tubules of the kidneys was observed from 24 hours after infection and changes in the glomeruli after 48 hours. Hyaline casts were present in the tubules after 72 hours even in the absence of other severe lesions in the kidneys. Crystalloid radiating centres were seen only in severe cases, both naturally and artificially infected. Degeneration of the cells of the liver was observed upwards of 24 hours after infection but was not a constant finding. Necrosis of the liver was seen only in severe cases.—KOGI SAITO.

PATE, D. D., BONEY, W. A. & DELAPLANE, J. P. (1954). **Turkey ornithosis. I. A report of natural and experimental infections.** — *J. Amer. vet. med. Ass.* **125**, 476-478. [Authors' summary slightly modified.] **1040**

Turkeys of all ages are susceptible to infection with the psittacosis virus but the mortality is greater in young birds. The incubation period varies with the route of exposure and often there are few or no symptoms before death. Symptoms may include droopiness, yellow to green droopings and sometimes respiratory symptoms.

Lesions may be confused with those of other diseases characterized by a fibro-purulent inflammation of the serous surfaces of the thoracic and abdominal viscera. Frequently, the only organs visibly affected are the spleen, liver, and kidneys, which may be enlarged. The spleen is often dark purple and the kidneys may be a light grey. The liver usually has grey or green discoloration.

ALLEN, E. G., GIRARDI, A. J., SIGEL, M. M. & KLEIN, M. (1953). **Studies on the psittacosis-lymphogranuloma group. III. The effect of aureomycin on the propagation of virus in the chick embryo.** — *J. exp. Med.* **97**, 783-795. **1041**

One mg. aureomycin by the allantoic route caused inhibition of the growth of a human strain of meningo-pneumonitis virus on the allantoic membrane. The chief role of the antibiotic appeared to be that of inhibition, the virus resuming growth when a critically low level of the drug in the allantois was reached. —D. LUKE.

BOZEMAN, F. M., WISSEMAN, C. L., JR., HOPPS, H. E. & DANAUSKAS, J. X. (1954). **Action of chloramphenicol on T-1 bacteriophage. I. Inhibition of intracellular multiplication.**—*J. Bact.* **67**, 530-536. **1042**

The intracellular growth of the phage is inhibited by bacteriostatic concentrations of chloramphenicol, which have no direct action no the phage or its absorption.—A. SEAMAN.

LEVADITI, C. & HENRY-EVENO, J. (1953). Symbiose entre le virus Coxsackie, souche B neurotrope, et celui du louping-ill. **[Symbiosis between the Coxsackie and louping-ill viruses.]** — *Ann. Inst. Pasteur.* **84**, 778-780. **1043**

The authors demonstrated symbiosis between Coxsackie virus and louping-ill virus through 4 passages in mice, effected by inoculation into the c.n.s.—A.S.

GROUPÉ, V., PUGH, L. H., LEVINE, A. S. & HERRMANN, C., JR. (1954). **Suppression of certain viral lesions by a microbial product, xerosin, lacking in demonstrable antiviral properties and produced by *Achromobacter xerosis*, n. sp.**—*J. Bact.* **68**, 10-18. [Authors' summary slightly modified.] **1044**

Virus pneumonitis—and also influenza in mice—was suppressed by daily parenteral injections of an antibiotic prepared from *Achromobacter xerosis*, to which the authors gave the name xerosin. It failed to affect the growth of virus *in vivo*, and did not possess antiviral properties *in vitro*. Combined use of the drug with aureomycin, oxytetracycline or chloramphenicol

enhanced the therapeutic effectiveness of these antibiotics. Although mortality amongst mice following intracerebral inoculation of influenza virus was reduced by the parenteral administration of xerosin, the pathogenicity of the virus for mice was not altered by contact with the drug *in vitro*. From these findings they concluded that such a substance may be of use in the treatment of virus diseases.

DEDIÉ, K. & KLAPÖTKE, E. (1952/3). Die Züchtung verschiedener Virusarten in Kulturen von embryonalem Mäusegehirngewebe. **[Cultivation of viruses in the brain tissue of mouse embryos.]** — *Arch. Exp. VetMed.* **6,** 487-496. **1045**

Various strains of F. & M. disease, Newcastle disease and distemper viruses were cultured on embryonic mouse brain tissue. This did not depend on the degree of neurotropism of the virus. This tissue is also suitable for the cultivation of non-neurotropic viruses.

—W. G. SILLER.

BOCK, M. (1954). Experimentelle Untersuchungen zur Epidemiologie des Q-Fiebers. **[Experimental investigation into the epidemiology of Q fever.]**—*Z. Tropenmed. u. Parasit.* **5,** 348-355. [Abst. from English summary.] **1046**

Rickettsia burneti was isolated from the urine of mice and hamsters that had been infected experimentally with the organism; it was also demonstrable in smears and in histological sections of the kidneys. B. discussed the epidemiological significance of these findings.

See also absts. **912** (identification of salmonella with a specific bacteriophage); **1221-1223** (reports, India); **1224** (report, Northern Rhodesia); **1225** & **1226** (reports, U.S.A.).

IMMUNITY

HAYES, S. P. & DOUGHERTY, T. F. (1954). **Studies on local antibody production. Demonstration of agglutination by lymphocytes.** —*J. Immunol.* **73,** 95-99. [Authors' summary slightly modified.] **1047**

Lymphocytes found in loose connective tissue spreads, prepared from mice with glass capillary tube antigen depots were surrounded by parallel rows of agglutinated homologous *Salmonella typhi-murium* and *S. typhi* antigens. This phenomenon was not observed in tissue spreads prepared from mice with saline- or horse serum-containing depots. It was concluded that lymphocytes or their immediate cytogenic precursors were responsible for the phenomenon of surface agglutination in this experiment.

The use of capillary tube antigen depots restricts the dissemination of antigens which come in contact with cells more slowly than in the conventional intravenous, subcutaneous or other methods of antigen injection. The method restricts the tissues and cells, involved in antibody production, to a small circumscribed area and thus greatly increases the probability of identification of causal factors in such studies. Further, since it has been shown that antibodies appear in the loose connective tissue adhering to the open end of the capillary depot earlier than antibodies can be detected in the circulation, it seems logical that anomalous cells found in these tissues participate in antibody synthesis. The demonstration of agglutination by lymphocytes under these circumstances is further evidence of their participation in antibody production.

NAGAREDA, C. S. (1954). **Antibody formation and the effect of X-radiation on circulating antibody levels in the hypophysectomized rat.**—*J. Immunol.* **73,** 88-94. **1048**

Exposure of rats to total body X-radiation of 500r 41 or 59 days after hypophysectomy markedly suppresses antibody formation following a single intravenous injection of washed sheep erythrocytes. Animals exposed to the same radiation dose with the spleen shielded by lead retain their ability to form antibodies.

—W. R. BETT.

WATSON, R. F., ROTHBARD, S. & VANAMEE, P. (1954). **The antigenicity of rat collagen.**—*J. exp. Med.* **99,** 535-550. **1049**

Purified collagen, prepared from the tail tendons of rats, when injected intraperitoneally into rabbits induces complement-fixing antibodies in low titre. By immunological methods, enzymatic analyses, and electron microscopy it can be shown that its serological activity is not due to a mixture with rat serum or a tissue polysaccharide. The evidence suggests that collagen exhibits species specificity.—W. R. BETT.

BROWN, E. S. & WOLFE, H. R. (1954). **Factors influencing the antibody production of chickens injected with a soluble antigen.**—*Poult. Sci.* **33,** 255-261. [Authors' summary modified.] **1050**

Chickens were injected with bovine serum albumin, the quantity of antigen injected, the route of injection and the number of injections being varied. Antibodies appeared earlier when

small amounts (40 mg. per kg. body wt.) were injected than when large amounts (200 mg.) were injected. The peak of the antibody content was attained earlier when the amount of antigen injected was small. The maximum antibody content was greater with large amounts than with small amounts of antigen. With small amounts, the peak of the antibody content was reached earlier when the antigen was injected i/v, but s/c injection appeared to yield a greater antibody content when the amount of antigen injected was large.

BOULANGER, P. & RICE, C. E. (1954). **A study of complement-fixation methods as applied to the demonstration of antibodies in birds.**— *Proc. 90th Ann. Meet Amer. vet. med. Ass.* Toronto, July 20-23, 1953. pp. 316-321. [Authors' summary modified.] **1051**

The authors attempted to use chicken complement and sheep red cells sensitized with chicken amboceptor in testing *S. pullorum* and Newcastle disease antisera for reactivity with homologous antigens. Fixation was obtained in some instances, but the results could not be uniformly duplicated. Inhibitory activity was present.

A modification of the indirect c.f. test proved a highly sensitive and specific method of detecting antibodies for N.D.V. in convalescent chicken serum. Convalescent pigeon serum rather than rabbit hyperimmune serum, as employed by Wolfe *et al.* [*V.B.* **20**, 647], was used in the titration of residual antigen in the mixtures of chicken serum and infected allantoic fluid. A good correlation was observed between serum dilution titres obtained in the indirect test and in haemagglutination-inhibition tests of the serum-dilution form with constant antigen.

SANG, J. H. & SOBEY, W. R. (1954). **The genetic control of response to antigenic stimuli.**— *J. Immunol.* **72**, 52-65. **1052**

The importance of genetic constitution in determining the level of antibody production is illustrated by the high heritability for response to tobacco mosaic virus.—W. R. BETT.

HEIDELBERGER, M., AISENBERG, A. C. & HASSID, W. Z. (1954). **Glycogen, an immunologically specific polysaccharide.** — *J. exp. Med.* **99**, 343-353. **1053**

Studies are presented which establish the reactivity of amylopectin and of glycogens from various species of higher animals, towards performed antibodies, especially those in horse antisera to the pneumococcal types *ii*, IX, XII, XX, and XXII. Fractionated glycogen and glycogen recovered after reprecipitation precipitate the antisera; glycogen after being acted upon by saliva does not.—W. R. BETT.

SZENT IVÁNYI, T. & SZABÓ, I. (1954). A sertések vércsoportjai. [**Blood groups in swine.**] — *Mag. állator. Lapja.* **9**, 266-271. [English and Russian summaries. Abst. from English summary.] **1054**

In the blood of 1,500 pigs the authors discovered 4 different isohaemagglutinins and 4 corresponding antibodies. They found 12 out of 15 possible combinations of these antigens.

—R.M.

RICE, C. E., BOULANGER, P. & ANNAU, E. (1954). **Serological effects of ethionine in the rabbit.** — *Canad. J. Biochem. Physiol.* **32**, 126-130. **1055**

Rabbits tolerated a lower dosage of ethionine than g. pigs. Complement titres fell. Total serum protein values remained normal but globulin increased in relation to albumin. Daily doses of 250 mg. increased the non-protein nitrogen of the serum.—R. GWATKIN.

RICE, C. E. & BOULANGER, P. (1954). **Parellel studies of complement and blood coagulation. XIII. The effect of anaphylactic shock.**— *Canad. J. comp. Med.* **18**, 315-322. **1056**

G. pigs actively or passively sensitized to horse serum developed anaphylaxis and changes in plasma coagulability when inoculated with appropriate antigen. A marked fall in complement occurred in both groups. The previous administration of antihistamine failed to control the fall of complement although it ameliorated or prevented the symptoms of shock.

—CHAS. A. MITCHELL.

LANGE, K. & WENT, E. J. (1954). **Investigations into the site of complement loss in experimental glomerulonephritis.** — *Amer. J. med. Sci.* **228**, 454-460. [Authors' summary slightly modified.] **1057**

Isolated rat kidneys were perfused from artery to vein with recirculation, with freshly prepared rat serum. When small amounts of anti-rat-kidney rabbit serum were added in the perfusate the complement titre of the perfusate fell to 0 after passage through the kidney.

When anti-rat-kidney rabbit sera were added in small increments to the kidney perfusate, the fall of complement activity after passage through the kidney paralleled the amount of nephrotoxic serum added. One passage through the kidney often sufficed to remove all complement activity in this experiment.

Cortisone added to the perfusate in large amounts did not prevent the fall in complement activity.

Anti-rat-kidney duck sera did not produce a fall in complement activity of the perfusate circulating through the kidney.

When anti-rat-kidney rabbit serum was added to rat serum perfusing an isolated rat liver, complement activity also fell. The complement loss, however, was much less on a weight by weight basis when liver was perfused than when kidney was perfused.

The lowering of complement activity after the addition of nephrotoxic sera to rat kidney perfusions was primarily due to removal of component C'_2.

See also absts. **862** (typing of staphylococci); **866** (anthrax); **876-877** & **882-884** (TB.); **892-894** (swine erysipelas); **907** (agglutination of r.b.c. with S. pullorum antigens); **913-920** (brucellosis); **968** (equine piroplasmosis); **969** (ovine piroplasmosis); **975** & **976** (F. & M. disease); **980-987** (rabies); **1005-1007** (rinderpest); **1015** (swine fever); **1016** (Teschen disease); **1017** (vesicular exanthema); **1021-1024** (dog distemper); **1031** (infection of rabbits with Newcastle disease virus); **1033-1036** (Newcastle disease); **1066** (use of haemagglutinins for identification of blood ingested by mosquitoes); **1088** (immunological concept of cancer); **1221-1223** (reports, India).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

HOFFMAN, R. A. (1954). **Self-treatment rubbing devices for louse control on cattle.**—*J. econ. Ent.* **47**, 701. **1058**

An account of a device whereby cattle can rub themselves against sacking saturated with chlordane (a chlorinated naphthalene derivative) in fuel oil.

Biting and sucking lice on cattle were controlled by this means.—D. W. JOLLY.

EICHLER, W., MROSEK, B. & TRAUE, H. (1953). Nachweis des Haarlingsbefalls und Erfolgsprüfung in der Schafhaarlingsbekämpfung. **[Diagnosis and control of louse infestation in sheep.]** — *Arch. exp. VetMed.* **7**, 504-507. **1059**

A note on jetting of sheep by hand for louse infestation.—H. BEHRENS.

V. KÉLER, S. (1954). Über die Laus der Dorcasgazelle und der Brandmaus. **[Morphology and occurrence of the louse, *Linognathus tibialis* on the Dorcas gazelle (*Gazella dorcas*) and of *Hoplopleura affinis* on mice and hamsters.]**—*Z. Parasitenk.* **16**, 111-125. **1060**

An account of the distribution of *Linognathus* spp. on the Dorcas gazelle and related animals and of *Hoplopleura* spp. on Muridae and Cricetidae.—E. J. L. SOULSBY.

ROCHA, U. F. & VAZ, Z. (1950). Miiase e perfração do rumen de bezerros por larvas de *Cochliomyia hominivorax* (Coquerel, 1858). Significação econômica. **[Myiasis and perforation of the rumen of calves by larvae of *C. hominivorax*. Economic significance.]**—*Rev. Fac. Med. vet., S. Paulo.* **4**, 281-286. [Abst. from English summary.] **1061**

The authors described myiasis in calves, one to two months old, caused by the larvae of *C. hominivorax* with localization in the rumen. The larvae, probably ingested during the licking of wounds, established themselves in the atrium of the rumen, there piercing the mucosa and subjacent layers, causing peritonitis and often invading the abdominal cavity.

From some hundreds of P.M. examinations made on calves on a ranch, it was found that myiasis of the rumen accounted for 8% of the total number of deaths in winter and for 15% in summer in that part of Brazil, this variation probably being due mainly to seasonal circumstances.

PÉRÈS, G. & SIMINTZIS. (1952-53). Le stade oesophagien d'*Hypoderma lineatum*. **[Incidence of *Hypoderma lineatum* larvae in the oesophagus of cattle in France.]**—*Bull. Soc. Sci. Vét. Lyon.* **54** & **55**, 377-379. **1062**

Between October 1952 and October 1953 the authors examined the oesophagi of 3,643 slaughtered cattle for warble fly larvae. They differentiated larvae of *H. lineatum* from those of *H. bovis*. In October 32% of the oesophagi were infested, in November to 33%, and then there was a steady decrease until in March only occasional single larvae were present. Infestation recommenced in June, when it reached 3%, and increased steadily to reach 32%, once more by October. Numbers of larvae per oesophagus varied greatly: one was found with as many as 180 larvae.—D. POYNTER.

BUSVINE, J. R. (1954). **Houseflies resistant to a group of chlorinated hydrocarbon insecticides.**—*Nature, Lond.* **174**, 783-785. **1063**

Resistance by houseflies to the γ-isomer of benzene hexachloride (γ-B.H.C.), and to chlordane, dieldrin, aldrin and toxaphene is quite distinct from D.D.T.-tolerance. With D.D.T.-tolerance there is evidence of at least two defence mechanisms, and the experimental work outlined was to determine whether the γ-B.H.C.-chlordane group of chlorinated hydrocarbons was equally heterogeneous. Four strains of flies from very different sources were

employed, and it was seen that the patterns of resistence were remarkably similar. B. discussed the possibility of a common defence mechanism and common factor of the γ-B.H.C.-chlordane group.—D. S. Papworth.

van Asperen, K. & Oppenoorth, F. J. (1954). **Metabolism of gamma-benzene hexachloride in the animal body.** [Correspondence.]—*Nature, Lond.* **173,** 1000. **1064**

Using an analytical method to which the breakdown products of benzene hexachloride (B.H.C.) isomers are believed to react negatively, and the isomers positively, the authors obtained evidence of rather rapid metabolism of γ-B.H.C. in the mammalian body and also in resistant houseflies. The composition of the metabolites is not known.—J. Edwards.

Burnett, G. F. (1954). **The effect of poison bait cattle on populations of *Glossina morsitans* Westw. and *G. swynnertoni* Aust.**—*Bull. ent. Res.* **45,** 411-421. [Author's summary slightly modified.] **1065**

An account of an experimental attempt to eliminate *G. morsitans* and *G. swynnertoni* from a small block of mixed bush in Tanganyika by means of "bait" cattle treated with D.D.T. Small cattle were used at the rate of 100 per sq. mile in herds of 12 or 13 per one-eighth of a sq. mile. Their numerical superiority over the large game was no more than about 3:1. The cattle were sprayed twice weekly. Originally a 10% suspension of the p,p'isomer was prepared from a commercial formulation of D.D.T. Later a laboratory-prepared emulsion (10% technical D.D.T.) was used.

Extermination was expected with a reduction in numbers of old male tsetse of 99·9%. In practice *G. morsitans* was reduced by 95·5% and *G. swynnertoni* by 92·5%. It was considered that there was sufficient immigration across the barrier clearing to account for the failure to achieve extermination of either species. It was not possible to say whether extermination would have been attained in the absence of immigration.

B. considered that with the insecticidal formulations now available there is not much prospect of improving on these results in similar conditions although a great reduction in tsetse numbers is possible and might stop the carrying of disease. In the dry season, after the grass has been burnt, there is better prospect of success.

Grjebine, A., Eyquem, A. & Fine, J. (1954). Utilisation des hémaglutinines pour l'identification de l'origine spécifique des hématies ingérées par les moustiques hématophages. [**Use of haemagglutinins for identification of blood ingested by mosquitoes.**]—*Ann. Inst. Pasteur.* **86,** 741-751. **1066**

Because of the epidemiological importance, the authors determined, by haemagglutination, the origin of mammalian blood in mosquitoes. The immune sera were first freed from heterologous agglutinins, *e.g.* the serum to agglutinate human erythrocytes was exposed to the erythrocytes of the local domestic animals. The blood in the stomach of engorged mosquitoes was mixed with specific antisera, the results being read after 5 min. The blood in the stomach retained its agglutinating power 12 hours after its ingestion.—Jas. G. O'Sullivan.

Daniel, M. & Ludvík, J. (1954). Oberflächenstrukturen des Scutums von *Ixodes ricinus*. [**Structure of the body surface of *I. ricinus*.**]—*Z. Parasitenk.* **16,** 241-252. **1067**

The authors described a collodium replica method of examining the surface of the scutum of a tick. Examination by this method of more than 80 male and female ticks from different hosts and localities revealed that a hexagonal surface structure was a specific character of *I. ricinus*.—E. J. L. Soulsby.

Arthur, D. R. (1953). **The morphology of the British Prostriata with particular reference to *Ixodes hexagonus* Leach. II.**—*Parasitology.* **42,** 161-186. **1068**

The author studied the palps, the size and form of the scutum and the cuticular structure of a number of genera of ticks and also the morphology, function and method of eversion of Gené's organ in *I. hexagonus*. He described the mechanism of the stretching of the cuticle of the various stages during feeding. The microstructure of the skin of the host, particularly its thickness, determined to some extent the distribution of the ticks on the host.

—Jas. G. O'Sullivan.

Rose, I. (1954). **A review of tick paralysis.**—*Canad. med. Ass. J.* **70,** 175-176. **1069**

R. stated that 332 cases of tick paralysis from the Pacific North-West area of North America are recorded in the literature, with a mortality of 11·7%. He emphasized recovery after removal of the ticks from the patient and in view of the high mortality indicated from these records he questioned the diagnosis of some of the cases.—P. J. G. Plummer.

Derrick, E. H. (1954). **A tetranychid mite which may attack man.** — *Aust. J. Sci.* **17,** 67-68. **1070**

A note reporting mild urticaria in human

beings caused by the wandering and biting of a tetranychid mite identified as an undescribed subspecies of *Paratetranychus insularis*. [Mites are receiving some attention at the present time and animal reactions to their presence are being watched.]—M. D. MURRAY.

MARŽAN, B. (1954). Patološko-histološke promjene u organima pokusnih životinja otrovanih ugrizom pauka *Lathrodectus tredecimguttatus*. **[Examination of organs of experimental animals bitten by the spider *Latrodectus tredecimguttatus*.]**—*Vet. Arhiv.* **24**, 1-12. [In Croat. English and German summaries. Abst. from English summary.] **1071**

M. studied the pathology of 29 cats, 2 rabbits, 10 g. pigs, 27 rats, and 3 mice, killed at intervals after being bitten by the spider *L. tredecimguttatus*. A few hours after the bite, degenerative changes were present in the liver, with capillary hyperaemia and oedema. After 24 hours there was necrosis of liver lobules. In the kidneys, the initial change consisted of severe hyperaemia, followed by degeneration of the epithelial cells of the kidney tubules, sometimes with hyaline degeneration of the small capillaries. Similar changes—initial hyperaemia followed by degeneration—were observed in the brain, lymph nodes, spleen, and adrenal gland. The spider occurs in the south and west of Yugoslavia.—R.M.

JENKINS, D. W. (1954). **Advances in medical entomology using radioisotopes.**—*Exp. Parasit.* **3**, 474-490. [Author's summary modified.] **1072**

Radio-active isotopes have been used to tag arthropods for ecological studies of dispersal and flight range, longevity, hosts and feeding habits, predation, and parasitism and also the transmission of disease. They may help to determine the epidemiological role of arthropods more accurately. J. suggested that ticks, fleas, lice and mites could be radio-actively tagged by injecting the vertebrate host animal with radio-active isotopes. Some nematodes, protozoa, bacteria, and viruses have been made radio-active. J. carried out a transmission experiment using labelled *Bact. coli* in the housefly. Tagging of insecticides used as sprays has been used as a means of assessing their value.

See also abstr. **947** & **949** (trypanosomes transmitted by G. brevipalpis); **1225** (report, U.S.A.).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

STIEGLER, L. (1954). Untersuchungen über die Zwischenwirtsspezifität von *Fasciola hepatica* im Raume Nordbayern. **[The intermediate host specificity of *F. hepatica* in northern Bavaria.]**—*Z. Parasitenk.* **16**, 322-350. **1073**

Limnea truncatula represents the only intermediate host of *F. hepatica* in northern Bavaria. As an expression of specialization, the movement of the miracidium ceases when the basal connective tissue layer of an unsuitable snail is reached. Miracidia obtained from Yugoslavia were, however, able to penetrate as far as the subepithelial tissue of *Stagnicola palustris*.

—W. G. SILLER.

HORTON-SMITH, C. & LONG, P. L. (1954). **The occurrence of the fluke *Plagiorchis notabilis*, Nicholl 1909 in the small intestine of a domestic fowl (*Gallus gallus*).** — *Vet. Rec.* **66**, 611. **1074**

Thirty-five specimens of *P. notabilis*, apparently hitherto unrecorded previously from the domestic fowl in Britain, were found in a 4½-month pullet in Montgomeryshire. The only abnormality was a mucoid reaction in the intestine.—M. L. CLARKE.

KUPEY, P. (1953/54). Die Gründe für das derzeitige Ansteigen der Rinderfinnenfunde. **[Reason for the increased incidence of *Cysticercus bovis* in Germany since 1945.]**—*Wiss. Z. Humboldt-Univ.* **3**, 89-110. **1075**

From an examination of statistical data and of the geographical distribution of cysticercus in slaughter cattle in Germany, K. concluded that the remarkable increase in incidence in the post-war period is due to various factors, namely, poor animal husbandry, obsolete urban drainage systems, and overcrowding of the human population under primitive conditions after the war; inadequate meat inspection during wartime and subsequent improved inspection leading to the detection of more cases; and lack of co-ordination between the medical and veterinary professions concerning drainage, buildings and general legislation.

—M. L. CLARKE.

JIRINA, K. (1953). Die Bedeutung der Mäusecysticercose für Laboratoriumsversuche. **[The significance of cysticercosis in mice used for laboratory experiments.]**—*Z. Tropenmed. u. Parasit.* **4**, 510-512. **1076**

Most of the mice for laboratory experiments harbour *Cysticercus fasciolaris*. Such animals are not normal and are therefore unsuitable for biological work especially for qualitative tests.
—H. BEHRENS.

RAUSCH, R. (1954). **Studies on the helminth fauna of Alaska. XX. The histogenesis of the alveolar larva of echinococcus species.**—*J. infect. Dis.* **94,** 178-186. **1077**

R. studied the progress of hepatic infestation in laboratory reared field voles and other rodents after dosage with gravid segments of a species of *Echinococcus* from arctic foxes in Alaska. Histopathological findings were recorded from 20 hours up to 170 days after dosage; larval development was characterized by very rapid proliferation of exogenous daughter cysts, in contrast to their mainly endogenous production in the case of *E. granulosus*.
—M. L. CLARKE.

WOLFGANG, R. W. (1954). **Indian and Eskimo diphyllobothriasis.**—*Canad. med. Ass. J.* **70,** 536-539. **1078**

A survey of human infestation with *Diphyllobothrium latum* in 5 Canadian hospitals revealed the infestation in 50 out of 1,026 patients; 9 were Eskimos and 41 Indians. W. discussed the epidemiology. He suggested that further work on the biology and ecology of endemic areas is necessary. He referred to animal hosts of the parasite.—THOMAS MOORE.

VELLING, G. (1953). Capillariosis hos høns. [*Capillaria* **spp. infection in fowls.**]—*Nord. VetMed.* **5,** 548-558. [In Danish. English and German Summaries.] **1079**

A brief discussion on capillaria infestation in fowls. Figures for the incidence of confirmed cases over two years were given in a table. Young birds, 2–6 months of age were mainly affected. In therapeutic trials on two farms, using phenothiazine and carbon tetrachloride respectively, no anthelmintic effects against species of *Capillaria* were demonstrable.
—R. B. HOLCOMBE.

ENDREJAT, E. (1954). Über die Trichostrongylidosis der Schafe. Feststellungen, Beobachtungen, Bekämpfung in Nord - Bayern. [*Trichostrongylus* **infestation of sheep.**]—*Dtsch. tierärztl. Wschr.* **61,** 255-263. **1080**

An account of a survey of Trichostrongylid infestations of sheep in north Bavaria, based on observations made on flocks over an 8-year period. Faecal egg counts made during a single year were lowest in the winter months with a peak in August. Species of *Trichostrongylus* and *Ostertagia* constituted the main burden. In an untreated lamb with a clinically severe infestation two peaks occurred, in May and September. E. discussed the importance of good feeding, particularly of giving the dam's milk to lambs; bacterial flora and enzyme activity in connexion with host resistance; and the production of immunity in lambs.
—M. L. CLARKE.

ROBERTS, F. H. S., TURNER, H. N. & MCKEVETT, M. (1954). **On the specific distinctness of the ovine and bovine "strains" of** *Haemonchus contortus* **(Rudolphi) Cobb (Nematoda : Trichostrongylidae).**—*Aust. J. Zool.* **2,** 275-295. **1081**

The authors studied the difference between *H. contortus* from sheep and from cattle. It was found that the length of the spicules, and the distances from the hook to the tips of the spicules were significantly greater in males from cattle. Although at least 14 different types of vulval processes were observed in adult females, 88·9% of females from sheep had a long linguiform process, whereas in 93·5% of females from cattle, it was short and round. In experimental infestations these two types maintained their characteristics in accordance with the host of origin, in spite of a change of host. The progeny of single females from sheep and cattle respectively gave a distribution of type similar to that of natural infestations in these hosts. Infective larvae from the two hosts were found to be visually distinct, significant differences being found between measurements of two morphological features. There was no evidence of any significant degree of crossbreeding between the two populations; this was supported by studies of natural populations. The authors cited evidence for the existence of some degree of host specificity. They proposed the retention of the name *H. contortus* (Rud. 1803) for the species occurring in sheep and the adoption of the name *H. placei* (Place 1893) for the species occurring in cattle.—R. I. SOMMERVILLE.

CAVIER, R. & SAVEL, J. (1953). Sur la présence d'une phosphorylase chez l'ascaris du porc, *Ascaris lumbricoides* Linné, 1758. [**Presence of a phosphorylase in** *A. lumbricoides*.]—*C. R. Acad. Sci. Paris.* **237,** 99-101. **1082**

The presence of a phosphorylase was demonstrable in the organs of *A. lumbricoides* var. *suis*. Activity, tested at pH 5·8, 7·2 and 8·2, was maximal at pH 5·8.
—JAS. G. O'SULLIVAN.

SPRENT, J. F. A. (1953). **On the life history of *Ascaris devosi* and its development in the white mouse and the domestic ferret.**—*Parasitology*. **42**, 244-258. **1083**

The development of *A. devosi*, a parasite of the fisher (*Martes p. pennanti*) and the marten (*M. a. americanus*) was followed, using the mouse and ferret as intermediate and final hosts respectively. Twelve days after dosage the third-stage larvae became encapsulated in the s/c tissue of the neck, shoulder and thorax. The adult worms became established in young ferrets which ate infected mice. S. discussed the life history of this parasite in relation to the evolutionary development of the ascaris group. —JAS. G. O'SULLIVAN.

VELICHKIN, P. A. (1953). **[Toxicity of phenothiazine for horses.]**—*Veterinariya, Moscow*. **30**, No. 8, pp. 46-49. [In Russian.] **1084**

Phenothiazine for the treatment of helminthiasis, if given in doses of not more than 0·1 g./kg. live wt. or not more than 40 g. per adult horse is not toxic, provided the horses are not on a deficient diet. Official instructions forbid the use of this drug in the U.S.S.R. from the 1st Nov. to the 1st April, the period when fresh grass is not available. Only the standardized phenothiazine for veterinary use should be employed.—A. MAYR-HARTING.

COOPERRIDER, D. E. (1954). **Parasite treatment practices of Georgia poultrymen.**—*Proc. 26th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Raleigh, N.C., June 14-15, 1954. pp. 3. [Mimeographed.] **1085**

C. emphasized the importance of making a diagnosis of parasitism before administering anthelmintics. The latter are frequently used by laymen according to "rule of thumb" methods. Phenothiazine and nicotine sulphate are often given and, recently, an old ascaricide, tartar emetic in the drinking water, has returned to favour.—M. L. CLARKE.

See also abstr. **1221-1223** (reports, India); **1225** (report, U.S.A.).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

WORLEY, G., JR. & GORHAM, J. R. (1954). **The comparative pathology of rhabdomyosarcoma with a report of a case in a dog.**—*Amer. J. Path.* **30**, 837-849. **1086**

The primary tumour was on the medial aspect of the left stifle joint of an 8-year-old male dog. Metastases were present in the lungs, liver, spleen, kidneys, mediastinal lymph nodes and adrenal glands. Multinucleated giant cells were present in the tumours. Definite cross-striations were seen in a few of the strap-like cells present in the lung lesions. No previous record was found of a metastasizing primary tumour of striped muscle in the lower animals. —E. COTCHIN.

HADFIELD, G. (1954). **The dormant cancer cell.** —*Brit. med. J.* Sept. 11th, 607-610. **1087**

After the surgical excision of a malignant tumour, there may elapse an unusually long period before recurrence or metastasis are clinically manifest, and it seems probable that the tumour cells responsible for the further growths have developed from tumour cells that have during the interval been in a state of temporary mitotic arrest, although retaining their former ability to multiply. The term "dormant" is applied to such malignant cells. Attention is drawn to the survival of certain tumours for long periods following exposure to low temperature, and to Craigie's demonstration in such thawed-out frozen tumours of "paramorphic" cells, the development of which appears to be responsible for the capacity of the malignant tumour to resist and survive anoxia, dehydration, and metabolic arrest in the frozen state. It is suggested that a study of the "paramorphic" state may throw light on the "dormant" cancer cell. —E. COTCHIN.

GREEN, H. N. (1954). **An immunological concept of cancer : a preliminary report.**—*Brit. med. J.* Dec. 11th, 1374-1380. **1088**

The concept advanced in this article is developed in a closely-reasoned account of experimental findings which are given in detail elsewhere, and it is difficult to do it justice in a short abstract. Briefly, however, the concept developed from observations on the similarity of the inhibiting effect of carcinogenic and of non-carcinogenic polycyclic hydrocarbons in coal-tar oil on some transplanted tumours. The effect is due to an enhancement of the immune reaction to homologous tumour tissue, the agents probably altering certain tissue protein complexes so that they behave as iso-antigens. It is believed that all the tumour-inhibiting substances, whether carcinogenic or not, as a primary func-

tion induce an immune reaction, but that only true carcinogens have a "promoting" in addition to this "initiating" action. It is suggested that, in carcinogenesis, there is first an antigenic change in "identity proteins" to an iso-antigen, and then the resultant antibody-response either destroys the pre-cancerous cell, or the continuing hyperplasia caused by the carcinogen eventually, in the face of the immune reaction, leads to an adaptation in the cell, whereby it loses more and more of its "identity proteins", and becomes in some degree antigenically "neutral", not attracting the usual disposal mechanisms, and more and more free to grow independently. It is suggested that the initial stage in the development of a malignant tumour may involve the loss, or antigenic change followed by loss, of "identity proteins".

—E. Cotchin.

Upton, A. C. & Furth, J. (1954). **The effects of cortisone on the development of spontaneous leukemia in mice and on its induction by irradiation.**—*Blood.* **9,** 686-695. [Interlingua summary. Authors' summary modified.] **1089**

The development of spontaneous lymphoma in a high leucaemia strain of mice was inhibited by administration of cortisone, although the hormone-induced atrophy of the thymus and other lymphoid tissues was only transient. Inhibition of lymphoma formation resulted from only three successive daily injections of cortisone but was greater if the treatment was prolonged for three months.

A high incidence of myeloid leucaemia was induced in a low-leucaemia strain of mice by a single exposure to 350 r of X-radiation.

Cortisone was without effect on the induction of myeloid leucaemia.

Cortisone administered before radiation increased, and after radiation decreased, the incidence of radiation-induced lymphomas in male mice.

Burmester, B. R. & Gentry, R. F. (1954). **The presence of the virus causing visceral lymphomatosis in the secretions and excretions of chickens.**—*Poult. Sci.* **33,** 831-842. [Authors' summary modified.] **1090**

The presence of the causative agent of visceral lymphomatosis in secretions of the oral and nasal cavities and in excretions of the intestinal and urinary tracts was determined by the inoculation of filtered preparations into groups of day-old chicks.

Highly significant incidences of visceral lymphomatosis (65–73%), during an experimental period of 270 days, were obtained in groups of chicks inoculated with oral-nasal washings from fowls with naturally occurring or induced visceral lymphomatosis. Faecal extracts from the latter, as well as from clinically normal birds, produced a high incidence of tumours; however, extracts of faeces from 66 fowls inoculated with the virus as adults were non-infectious. The tumour-producing activity of a filtrate of lymphomatous liver of known high potency was lost when it was mixed with fresh faeces of normal fowls.

Love, R. & Sharpless, G. R. (1953). **Studies on a transplantable chicken lymphoma (RPL-12). I. Pathological changes following transplantation of the tumor.** — *Cancer Res.* **13,** 869-875. [Authors' summary modified.] **1091**

Inoculation into healthy chickens of varying amounts of the RPL-12 lymphoma led either to growth of a palpable tumour with subsequent regression, or to growth progressing to the death of the bird. Following regression of the tumour birds were more resistant to challenge than normal birds of the same age.

Two phases were recognizable in the life cycle of the implanted tumour cells: a stage of progressive growth of 10–17 days' duration, and a stage of regression of 3–4 days' duration, characterized by phagocytosis of apparently intact tumour cells.

The authors described the nature of the local and distant reactions of the host to the implanted tumour; they interpreted changes which occurred in the lymphoid and plasma cell series as the morphological manifestations of an immune reaction. No such changes were demonstrable in birds inoculated with heat-killed tumour tissue, nor had they any resistance to subsequent challenge with live tumour cells.

See also abst. **1223** (report, India).

NUTRITIONAL AND METABOLIC DISORDERS

Jukes, T. H. & Williams, W. L. (1953). **Nutritional effects of antibiotics.** — *Pharmacol. Rev.* **5,** 381-420. (205 refs.) **1092**

An extensive and critical review. The authors conclude: "the addition of certain antibiotics to the diet at low levels increases the rate of growth of young animals and the efficiency with which they utilise food." This effect is not

obtained in the absence of bacteria. The wide-spectrum antibiotics produce the most consistent effects over a range of species. The effect may be due to prevention of an unrecognized mild "early sprue-like" condition. The practice is extremely widespread and has been tried successfully with human infants. No untoward effects on public health have resulted and the emergence of resistant bacteria had not been reported. The authors discussed the effect on mineral and vitamin requirements. The only effects on reproduction observed have been increased viability of young pigs and rabbits after feeding antibiotics to the mother.

—P. H. Herbert.

Hironaka, R. & Bowland, J. P. (1954). **Antibiotic feed supplements in western Canadian swine ration.**—*Canad. J. agric. Sci.* **34,** 343-352. **1093**

Because of the increase in use of antibiotic supplemented feed in Canada and the absence of factual information an extensive trial was arranged.

The results indicated that although there was a wide variation in response the general trend was for greater gains when aureomycin + penicillin was used. No definite protein sparing effect was noted. When 200-lb. pigs were fed the supplement there was a frequent tendency towards reduction in carcass quality. There was also a greater shrinkage on cooling of the carcass when compared with those which had been fed unsupplemented rations.

—Chas. A. Mitchell.

Rhodes, R. A., Sarles, W. B., Monson, W. J., Harper, A. E. & Elvehjem, C. A. (1954). **Stimulation and inhibition by antibiotics of intestinal bacteria in chicks.**—*J. Nutr.* **53,** 289-302. [Authors' summary slightly modified.] **1094**

Chicks were fed antibiotics in a synthetic ration which contained limiting amounts of folic acid. The numbers of bacteria in the contents of different parts of the intestines of these chicks were determined at intervals. The feeding of the antibiotics increased the growth of the chicks, this being accompanied by changes in the numbers of coliform bacteria and lactobacilli in the intestinal tract. The antibiotics generally increased the numbers of coliform bacteria in all levels of the intestinal tract. Aureomycin was most effective in the upper levels of the tract; a combination of bacitracin and penicillin tended to be more effective in lower levels of the tract. In contrast to their effect on coliform bacteria, the antibiotics reduced the numbers of lactobacilli. The bacitracin and penicillin supplement virtually eliminated the lactobacilli in the contents of all levels of the tract. Aureomycin was less effective in depressing the numbers of lactobacilli. Thus, the antibiotics may have acted in these experiments to promote greater synthesis of growth factors by the coliform bacteria and to reduce the competition for folic acid or other essential compounds by the lactobacilli.

Sieburth, J. McN., Jezeski, J. J., Hill, E. G. & Carpenter, L. E. (1954). **Some microbiological observations on the antibiotic-fed chick.**—*Poult. Sci.* **33,** 753-762. [Authors' summary modified.] **1095**

The caecal and faecal microflora does not necessarily reflect changes in the anterior segments of the intestinal tract. All types of the cultivable microflora of the small intestine studied by the authors were consistently fewer in number in chicks fed a diet supplemented with either penicillin or aureomycin, than in chicks which were not given antibiotics. The rate of respiration was lowest in the contents of the small intestine of chicks fed the aureomycin-supplemented diet. The odour of the faeces and intestinal contents was generally much milder in chicks fed antibiotics. The mesenteric blood vessels along the small intestine were usually more prominent and dilated in those birds receiving the antibiotic supplements.

The authors suggested that the reduction in the rate of respiration and in the population of the small intestine of chicks fed antibiotics may be responsible for the decreased odour of the intestinal contents and the greater circulation of blood in the small intestine. The over-all result may be either a greater utilization of the nutrients in the feed by the host animal, or a decreased production of toxic substances (which either inhibit growth or absorption) by the intestinal microflora, or both.

Morrison, A. B., Hunsaker, W. G. & Aitken, J. R. (1954). **Influence of environment on the response of chicks to growth stimulants.**—*Poult. Sci.* **33,** 491-494. [Authors' summary modified.] **1096**

Duplicate groups of 50 chicks (equal numbers of each sex per group) were fed a basal ration, and the same ration plus each of several growth stimulants, in an old and a new environment.

Results of an analysis of variance of the weights at six weeks of age indicated the pres-

ence of highly significant effects of ration, sex, and environment on growth response. A highly significant interaction between the ration fed and the environment was also noted. 3-Nitro-4-hydroxyphenylarsonic acid produced a highly significant growth response in the old but not in the new environment. Penicillin produced a significant growth response in the new environment and a highly significant response in the old one. No growth response to either arsanilic acid or "ethomid C/15" (a surface-active agent) was observed in either environment. In all cases efficiency of feed utilization reflected the rate of growth.

CARROLL, E. J. & HUNGATE, R. E. (1954). **The magnitude of the microbial fermentation in the bovine rumen.**—*Appl. Microbiol.* **2,** 205-214. **1097**

The authors estimated the rate of production of total volatile acids and of acetic, propionic, and butyric acids in rumen contents which were incubated under conditions simulating those of the rumen. The highest production of volatile acids took place in the rumen contents of the cattle fed with grain, the next highest in cattle fed with hay, and the lowest in cattle at pasture.—R.M.

KAMOCHI, C. (1953). **["Fog paralysis", an endemic disease in Japan.]**—*J. Jap. vet. med. Ass.* **6,** 452-455. [In Japanese.] **1098**

A disease of cattle, known as "kiriyoibyo" ("fog paralysis") has been known for several decades in a localized region of Japan; it was formerly believed to be caused by a poisonous plant, *Xolisma elliptica*. From surveys of outbreaks in the summers of 1952 and 1953, K. concluded that the disease is a form of collapse due to malnutrition and precipitated by an abrupt change in management or weather.—KOGI SAITO.

ROBERTS, H. E., WORDEN, A. N. & EVANS, E. T. REES. (1954). **Observations on some effects of colostrum deprivation in the calf.**—*J. comp. Path.* **64,** 283-305. [Abst. from authors' summary.] **1099**

The authors studied the effects of colostrum deprivation in 12 Shorthorn, 8 Friesian and 4 other calves, and compared their health and performance with those of 12 control calves that were permitted to receive colostrum. There was a high incidence of disease (early scouring, later joint-ill) in the calves deprived of colostrum. There was rapid establishment of bacteria in the gut following first feeding. Mucus and blood were commonly observed in the faeces between 3 to 10 days of age. There were two peaks in rectal temperature, occurring on or about the third and ninth days of life respectively. In calves that had received colostrum the erythrocyte count of the blood fell gradually during the first 3 to 4 weeks of life, but not in colostrum-deprived calves. This fall was, however, delayed in scouring calves by the accompanying anhydraemia.

The inversion of the neutrophile-mononuclear cell ratio was not affected by colostrum deprivation. The leucocytic responses of all calves during the first weeks of life appeared to be deficient.

In calves deprived of colostrum there was a marked increase in the blood fibrinogen level during the first few days of life. In those that survived there was a gradual rise in the euglobulin-pseudoglobulin I fraction of the serum, as compared with a continuous fall in the concentration of this faction from the early peak value in normal calves fed colostrum, and by about 80 days of age the values recorded in both groups were of approx. the same order, but below those of adult cattle.

Calves affected with joint-ill had high blood fibrinogen levels and developed a hyperglobinaemia.

Both colostrum-deprived and colostrum-fed calves appeared to be capable of producing their own antibodies as early as 6 to 7 days of age following repeated vaccination.

BALCH, C. C., BALCH, D. A., BARTLETT, S., JOHNSON, V. W., ROWLAND, S. J. & TURNER, J. (1954). **Studies on the secretion of milk of low fat content by cows on diets low in hay and high in concentrates. IV. The effect of variations in the intake of digestible nutrients.**—*J. Dairy Res.* **21,** 305-317. [Authors' summary modified.] **1100**

Digestibility trials were conducted, and the rate of passage of hay was measured, with 5 Shorthorn cows during a period of normal diet and during 2 experimental periods in which diets low in hay and high in concentrates were given. In the first experimental period the concentrates were cubes of the wartime type sold as National Cattle Food No. 1, and containing a variety of constituents; in the second they were a mixture of flaked maize (50%), wheat feed (35%) and decorticated ground-nut cake (15%). For convenience these are referred to as conc. 'cubes' and 'mixture' respectively.

During the initial and final control periods the cows consumed daily 17–21 lb. of hay, and

about 4·5 lb. concentrates per 10 lb. of milk produced. In the initial control period the concentrates were the conc. cubes, and in the final they were the conc. mixture. The hay was reduced to 4 lb. daily during the two experimental periods, the remainder of the standard requirements being given as concentrates conc. cubes in the first experimental period and conc. mixture in the second. This reduction in the hay did not affect the fat content of the milk when the cubes constituted the remainder of the diet, but there was a striking mean fall of 1·04% fat when they were replaced by the conc. mixture. This represented a loss of over 30% in the yield of fat.

Digestibility trials in the initial control and first and second experimental periods, indicated that the fall in milk fat content was not the result of changes in the amounts of dry matter, crude protein, ether extract, crude fibre, cellulose, cellulosans or pentosans nor in cellulose digested. The essential difference between the diet of low hay with the conc. mixture and the other diets given was that it provided a high intake of starch yet had little of the physical property of roughage. The authors concluded that depression of milk fat content results from a combination of these two factors and probably originates from changes in the physical and biochemical processes of the reticulo-rumen.

The intake of starch equivalent, as calculated from the intake of digestible nutrients, was close to standard requirements in all periods of the experiments, but there was a surplus of digestible crude protein.

The mean solids-not-fat content of the milk rose 0·48% at the time of the fall in milk fat, and this was entirely due to an increase in milk protein. After the return to normal diets the recovery of solids-not-fat was slower, but no less complete, than the recovery in milk fat.

ROSENBERG, M. M. (1954). **Napier grass (*Pennisetum purpureum*) meal, a substitute for alfalfa meal in chick starter rations.**—*Poult. Sci.* **33**, 803-809. [Author's summary modified.] **1101**

Napier grass meal was prepared from the entire plant harvested from 3 to 14 weeks after a previous cutting. Five per cent. of the meal was added to a standard chick starter ration. This was compared with a diet containing 5% lucerne meal. Chicks grew equally well on these two rations. Whereas efficiency of feed conversion tended to be somewhat in favour of napier grass meal prepared from 3- to 10-week-old cuttings, the meals prepared from samples cut at 11, 12, 13, and 14 weeks were variable in efficiency although essentially as good as imported lucerne meal. When neither lucerne meal nor napier grass meal was included in the ration, growth rate was significantly depressed. Toxic effects were not observed in these trials.

The results of this study showed that napier grass meal could effectively replace lucerne meal in chick starter rations. This finding may have economic applicability because, in contrast to lucerne, napier grass can be grown efficiently and economically in the tropics.

UEDA, A. & OHBAYASHI, M. (1953). **[Studies on hepatic cirrhosis in the domestic animals. I. The liver atrophy in the adult horse.]**—*Jap. J. vet. Sci.* **15**, 109-118. [In Japanese. English summary pp. 119-120.] **1102**

An account of the pathological examination of cirrhosis of the liver in two horses that had exhibited nervous symptoms similar to those of the disease spoken of as Schweinsberg disease, Winton disease, "walking disease" and "dunsiekte".—KOGI SAITO.

SIEDLER, A. J. & SCHWEIGERT, B. S. (1954). **Effect of the level of animal fat in the diet on the maintenance, reproduction and lactation performance of dogs.**—*J. Nutr.* **53**, 187-194. [Authors' summary modified.] **1103**

The authors studied the maintenance, reproduction and lactation performances of Cocker Spaniel dogs that had been fed since weaning a basal ration either with or without the addition of 4 or 8% fat (anti-oxidant stabilized choice white grease) or 18% sucrose. The addition of 4 or 8% fat or 18% sucrose increased the efficiency of the ration for maintenance of the females before breeding.

The reproductive performance of bitches fed the basal ration plus 4% added fat was somewhat better than that of bitches fed the basal ration. The addition of 8% fat to the basal ration appeared to reduce the reproductive capacity as judged by the number of puppies which died 24 hours after birth, and the weight of the puppies at birth, although this result may be due in part to the larger number born per litter for this group. The reproductive capacity of bitches fed 18% added sucrose was poor.

The average rate of gain of puppies from bitches fed 4% added fat was higher than any of the other groups tested. This difference was primarily due to greater weight gains in the second litter for this group as compared to those for the basal ration, and was statistically

significant. The av. rate of gain of puppies from bitches fed 8% added fat or 18% added sucrose was slightly less than that for puppies from bitches fed the basal ration.

The addition of 4 or 8% fat to the basal ration increased the av. food and calorie efficiencies of the lactating bitches when compared to the basal ration.

On the basis of all criteria used, the results obtained were excellent when 4% animal fat was added to the basal diet.

MIDDLESWORTH, L. V., TUTTLE, A. H. & THRELKELD, A. (1953). **Iodinated proteins in milk.**—*Science*. **118,** 749. **1104**

Following the demonstration of iodide in the milk of women and of animals, two lactating dogs were injected with I^{131}. Autoradiographs prepared from electrophoresis papers indicated that milk contains an iodinated protein.

—J. A. NICHOLSON.

FINK, H., SCHLIE, I. & RUGE, U. (1953). Über die Zusammensetzung, die Verdaulichkeit und die Eiweiss-Qualität des Mycels von *Penicillium notatum*. Ein Beitrag zur Verwertung der Pilzabfälle bei der Penicillin Gewinnung. **[Composition, digestibility and protein quality of the mycelium of *P. notatum* from residual waste in penicillin production.]** —*Hoppe-Seyl. Z.* **292,** 251-263. **1105**

The authors found that the biological quality of the protein in the mycelium of *P. notatum* corresponds with that of vegetable protein of potatoes and of yeast (*Torula utilis*); they observed no animal protein factor effect. The waste from the manufacture of penicillin can be used in quantities used for other protein feeding stuffs.—H. BEHRENS.

CHEPUROV, K. P. & CHERKASOVA, A. V. (1954). **[Urov disease of farm animals and fowls.]**—*Veterinariya, Moscow*. **31,** No. 7. pp. 38-42. [In Russian.] **1106**

The authors confirmed the theory that "Urov disease" [*V.B.* **23,** 973] is not infectious but is a chronic mineral deficiency. Affected cattle, pigs, and birds show retarded development, particularly of the skeleton, and often die. Animals from outside the Urov district developed the disease after feeding on fodder from the Urov district. Supplementing the diet with the minerals in which Urov plants are deficient had a marked prophylactic effect, although the disease was not completely prevented. Animals put on a diet of potatoes and oats, grown in the Urov district, but on soil enriched with superphosphate and lime, did not develop the disease.—A. MAYR-HARTING.

THÉRET, M. (1954). Influence de l'administration d'oligo-éléments minéraux à des chiennes gestantes et à des chiots avant le sevrage, sur la lactation des mères et la croissances des jeunes. **[Effect of trace elements on pregnant and suckling bitches and on their puppies.]** — *Bull. Acad. vét. Fr.* **27,** 397-401. **1107**

Administration of a solution containing iron 0·1 metallic ions per litre, manganese 0·02 calcium 0·05, copper 0·01, zinc 0·001, and magnesium 1.5, is stated to produce more copious and prolonged lactation in pregnant bitches, and to make their puppies more resistant to illness, and to grow rapidly between the third and fourth week.—W. R. BETT.

TODD, J. R. (1954). **The phosphorus status of cattle in part of Central Province, Kenya.**—*E. Afr. agric. J.* **20,** 66-68. **1108**

African-owned cattle grazing pasture with low phosphorus content (P_2O_5=0·12—0·13% dry weight, winter) were found to have subnormal (25% of 202 animals<4 mg.) but not very low (no animals<2 mg.) blood phosphorus levels. Clinical aphosphorosis was not observed, though many animals were in poor condition. T. pointed out the fallacy of assuming that blood phosphorus levels must neccessarily be low in depleted cattle.—P. H. HERBERT.

GORDON, J. G., TRIBE, D. E. & GRAHAM, T. C. (1954). **The feeding behaviour of phosphorus-deficient cattle and sheep.**—*Brit. J. Anim. Behav.* **2,** 72-74. [Authors' summary modified.] **1109**

Ninety cattle, representative samples from which revealed low blood-phosphorus levels, and 500 sheep grazing 5,500 acres of rough pasture in the Isle of Skye, where both the soil and pasture were low in phosphorus, showed evidence of osteophagia and allotriophagia. When they were offered a choice between a calcium supplement and a calcium-phosphorus supplement, they had no significant preference for the latter. Although they had the opportunity of doing so, they failed to remedy their deficiency by eating sufficient quantities of a phosphorus supplement.

HAMPTON, J. K., JR. (1954). **Uptake of radio-iron in tissue storage compounds in normal and hemosiderotic mice and its utilization for**

erythropoiesis.—*Amer. J. Physiol.* **176,** 20-24. **1110**

Radio-iron deposition was studied in relation to size of body stores. In normal mice, ferritin-iron deposition relates directly to the initial size of the fraction. In mice previously loaded with iron, haemosiderin-iron deposition is unchanged but ferritin-iron deposition is increased. Haemorrhage seems to realease the more recently stored iron first, from both fractions.—P. H. HERBERT.

RAMSAY, W. N. M. & CAMPBELL, E. A. (1954). **Iron metabolism in the laying hen.**—*Biochem. J.* **58,** 313-317. [Author's summary modified.] **1111**

The authors determined egg and plasma iron over a whole season in 15 birds. The findings revealed a great elevation of plasma iron just before laying commenced. The high level persisted during the period of regular laying, and there was a high correlation between mean plasma iron and mean egg iron. The values for total blood iron over the same period indicated that in many hens the onset of laying is preceded by a fall in blood haemoglobin. The lower level persists during the period of regular laying. The values for total and non-haem iron in liver, spleen and kidney over the short period during which hens were coming into lay appeared to indicate that there may be a slight decrease in non-haem iron in the liver at this time, but that the quantity involved is small compared to that utilized for the eggs in the same period.

It was concluded that the demand for iron for the eggs must be met by an increase in the efficiency of iron absorption.

MILLEN, J. W., WOOLLAM, D. H. M. & LAMMING, G. E. (1954). **Experimental hypovitaminosis-A in relation to hydrocephalus in the rabbit.**—*J. Anat., Lond.* **88,** 567. [Only abst. given. Abst. from abst.] **1112**

In an earlier paper [*V.B.* **24,** 1200] the authors had reported that hydrocephalus developed in litters born to female rabbits fed a diet deficient in vitamin A. In further studies they found that where female rats are fed diets deficient in vitamin A for long periods before mating, a hydrocephalic condition may already be established in the offspring at birth.—A.S.

JACOBSON, W. (1954). **The mode of action of folic acid antagonists on cells.**—*J. Physiol.* **123,** 603-617. **1113**

Leucaemic bone-marrow (human and mouse) and embryonic chick tissue growing *in vitro* show arrest of mitosis in metaphase after treatment with aminopterin or A-methopterin. The number of cells entering mitosis is not affected. J. suggested that folic acid antagonists replace a substance which is necessary for the mutual repulsion and separation of the chromatids. Hence the chromosome clumping which was observed.—P. H. HERBERT.

NORDFELDT, S., GELLERSTEDT, N. & FALKMER, S. (1954). **Studies on rape-seed meal and its goitrogenic effect on pigs. A nutritional and histopathological study.**—*Acta path. microbiol. scand.* **35,** 217-236. [In English. Authors' summary modified.] **1114**

The authors studied the effect of the goitrogenic principle of commercial Swedish rape-seed meal on growth in 105 pigs, and on the histology of different organs. Ten to twenty per cent. rape-seed meal in the diet caused decreased growth, and increase in weight of the liver, kidneys and thyroid gland. The effect on the thyroid was particularly marked, the histological changes consisting mainly of epithelial hyperplasia.

By repeated extraction of the rape-seed meal in water at 50°C. and by drying the product *in vacuo* at 100°C., the goitrogenic principle (l-5-vinyl-2-thio-oxazolidone) was largely removed or inactivated. The water-treated product gave better daily wt. increase in growing pigs; the thyroids approached normal size and decreased in wt. from 35 g. to 10 g., and the histological picture was normal.

When the ration containing untreated rape-seed meal was supplemented with 0·5 g. iodinated casein per 100 kg. body wt., the wt. of the thyroids also decreased from 35 g. to 10 g. and showed a histological picture similar to colloid goitre. No effect on the growth of the animals was noted. Addition of vitamin B_{12} or/and bacitracin to rations without animal protein gave no significant effect.

Wheat bran had a favourable effect upon growth in pigs when 10% was added to an all-plant protein diet. Definite histological changes were not noted in other organs than the thyroid.

GILL, J. C. & THOMSON, W. (1954). **The production of ketonaemia and pregnancy toxaemia in ewes through manipulation of the feeding level.** — *J. agric. Sci.* **45,** 229-240. [Authors' summary modified.] **1115**

The authors studied the effect of different levels of feeding during pregnancy on the production of ketonaemia and pregnancy toxaemia

in 120 ewes. In ewes which were gaining weight during the latter part of pregnancy, blood ketone level was low and pregnancy toxaemia was absent; ketonaemia and pregnancy toxaemia were observed in ewes which failed to gain wt. during this period. Pronounced ketonaemia was not always associated with pregnancy toxaemia, for out of 29 ewes which had a blood conc. of more than 20 mg. β-hydroxybutyric acid per 100 ml., only 7 showed signs of the disease. The first symptoms were observed at about 14 days before the estimated lambing date, and affected ewes tended to lamb before term. In ewes on a comparatively low level of nutrition there was only one case of pregnancy toxaemia, but in ewes previously in good condition, reduced to a similarly low level of nutrition during the critical period, there was a high incidence of the disease.

HOFLUND, S., NORDSTRÖM, G. & HALLGREN, W. (1954). Acétonämibehandling med natriumpropionat. **[Treatment of ketosis in cows with sodium propionate.]**—*Medlemsbl. Sveriges VetFbd.* **6,** 305-306. **1116**

A preliminary note reporting good results obtained in 48 cases of ketosis in cows by drenching with 100 ml. sodium propionate in 10% aqueous soln., twice daily for 4–5 days. Uncomplicated cases usually recovered in 3–5 days, secondary acetonaemia usually requiring further dosage. In cases where propionic acid-forming bacteria are no longer present in the rumen the authors recommended in addition the transfer of 5 l. of ruminal fluid from a healthy cow having calved normally about a month previously, a further transfer being made after 2 days.—F.E.W.

MAPLESDEN, D. C. (1954). **Propylene glycol in the treatment of ketosis.**—*Canad. J. comp. Med.* **18,** 287-293. **1117**

An account of successful treatment with propylene glycol of 10 cows with ketosis. Seven were given 250 g. of the drug twice daily for 4 days and 3 received 125 g. for the same time. The higher dosage gave better results. One cow relapsed after 8 days but made a complete recovery after a second course of treatment.

—R. GWATKIN.

See also abst. **1228** (book, pathology).

DISEASES, GENERAL

FLÜCKIGER, G. (1954). Efforts réalisés jusqu'à présent dans la lutte internationale contre les épizooties. **[International control of epizootics.]** — *Bull. Off. int. Epiz.* **41,** 921-945. [English and German summaries.] **1118**

A survey of the activities and vicissitudes of the Office International des Epizooties (O.I.E.). Many similar organizations have been formed during and since the second world war. This has resulted in overlapping and duplication of effort. F. considered that the O.I.E. should continue to function as a definite and separate entity, extend its activities, especially in regard to food hygiene, and generally work in close collaboration with F.A.O.

—T. E. GATT RUTTER.

GZHITSKI, S. Z. (1953). **[Pathogenesis and treatment of equine myohaemoglobinaemia.]** —*Veterinariya, Moscow.* **30,** No. 8, pp. 40-43. [In Russian.] **1119**

Biochemical analyses were carried out on muscles of healthy horses and of horses affected with equine myohaemoglobinaemia, at rest and after work. The basis of the illness seems to be a constitutional weakness of the islets of Langerhans in the pancreas. Glycogen is broken up into complicated hexose- and triose-phosphor ethers, but any further breakdown to lactic acid is delayed, and there is very little re-synthesis to glycogen, creatine phosphate and adenosine triphosphate, and the muscles are therefore deprived of their energy potential. Insulin, if given before secondary changes in the muscles occur, is clinically effective and the biochemical composition of the muscles of treated horses becomes more normal.

—A. MAYR-HARTING.

RAGNI, M. & FERRINI, R. (1954). Indagini statistiche sulle manifestazioni patologiche dell'apparato mammario nelle bovine del comprensorio di Stupinigi (Torino). **[Diseases of the mammary glands of cows in Turin.]** — *Progr. vet., Torino.* **9,** 436-437. **1120**

In a survey of diseases of the mammary gland in 1,167 cattle, over a period of 2 years the most common were streptococcal mastitis and cow pox, the former accounting for 18%. TB. and staphylococcal mastitis accounted for 2·6% and 1·4% of cases respectively.

—I. W. JENNINGS.

KRISPIEN, H. (1954). Ist der Ingham- und Harrisontest in der Veterinärmedizin verwendbar? [**Use in veterinary medicine of the bilirubin tests described by Ingham and by Harrison.**] — *Tierärztl. Umsch.* **9,** 156-157. **1121**

The methylene blue test and those described by Ingham and by Harrison are useful for the determination of liver function in cattle. The two latter tests pick out early dysfunction and treatment is advisable when these reactions are positive. The methylene blue test gives a positive reaction mainly in more established and chronic cases when treatment is, as a rule, no longer successful.—W. G. SILLER.

BRION, A. (1954). La rhinite atrophique contagieuse du porc. [**Contagious atrophic rhinitis of swine.**]—*Schweiz. Arch. Tierheilk.* **96,** 493-502. [In French. English, German and Italian summaries.] **1122**

An account of the clinical and P.M. findings of the first reported outbreak of atrophic rhinitis in young pigs in a localized area of France. B. discussed the aetiology.

—M. B. HAWKSLEY.

MÜLLER, G. (1954). Plötzlicher Tod bei Absatzferkeln. Eine Betrachtung über seine Beziehungen zum "enzootischen Herztod" der Schweine und Vorschläge über diätetische und therapeutische Massnahmen. [**Sudden death in weanling piglets—its relation to fatal syncope.**]—*Tierärztl. Umsch.* **9,** 309-312. **1123**

A note on fatal syncope in piglets at the time of weaning. Among possible causes M. discussed dietary deficiency, inherited congenital weakness, and the absorption by the intestine of insufficiently digested food factors, particularly amino-acids. He suggested dietary measures and the administration i/m of normal serum together with a commercial product "biodalbeen" [containing cobalt, iron, copper, arsenic and a growth factor].—A.S.

MAREEV, M. V. (1953). [**Otitis in pigs.**]—*Veterinariya, Moscow.* **30,** No. 8, pp. 43-45. [In Russian.] **1124**

Otitis media is more common in pigs than in other animals. Only purulent forms give rise to clinical symptoms. The animals have fever, the ear droops, the co-ordination of movements is disturbed; sometimes the facial nerve is paralysed. In untreated cases death from septicaemia is usual. Surgery provides the only cure and M. gave details of the operation and of the treament of complications. The main factors in the pathogenesis are cold and dampness which cause the streptococcal flora of the nose and throat, not in itself pathogenic, to invade the Eustachian tube and middle ear.

—A. MAYR-HARTING.

WACHSTEIN, M. (1954). **Recent advances in the experimental pathology of the pancreas.**—*Bull. N.Y. Acad. Med.* **30,** 483-487. (47 refs.) **1125**

A discussion on the literature. W. mentioned certain simple chemical substances (alloxan etc.) which act selectively on the various cellular components of the pancreas. Hydropic degeneration of the beta cells in the islets of Langerhans also occurs after prolonged cortisone administration. In mice pancreatic necrosis can be produced by certain strains of Coxsackie virus. Focal pancreatic lesions can be transformed into fulminating haemorrhagic necrosis by bacteria. He emphasized the importance of nutritional factors for the structural and functional integrity of the pancreas.

—W. R. BETT.

POISONS AND POISONING

EHRLICH, C. (1954). Beobachtungen und Untersuchungen über chron. Fluorvergiftungen bei Rindern. [**Chronic fluorine poisoning in cattle.**] — *Dtsch. tierärztl. Wschr.* **61,** 225-228. **1126**

Eight cattle grazing on pastures adjoining an aluminium works developed typical signs of chronic fluorine poisoning. The grass contained 30–50 times more fluorine than normal grass, and the fluorine content of the teeth, bones, and internal organs of the animals was 6–10 times higher than in normal cattle. High fluorine levels found in the milk and urine (but not in the blood) enabled diagnosis to be made during life.—G. P. MARSHALL.

BAIKIE, A. G. (1954). **The fecal excretion of urobilinogen of normal and lead poisoned guinea pigs.**—*Blood.* **9,** 461-472. [Interlingua summary.] **1127**

In g. pigs experimentally poisoned with lead nitrate there was a statistically significant increase in urobilinogen excretion which was correlated with a fall in haemoglobin level. This would support the view that haemolysis plays an important part in the anaemia of chronic lead poisoning.—G. P. MARSHALL.

CAMPBELL, J. B., DAVIS, A. N. & MYHR, P. J. (1954). **Methaemoglobinaemia of livestock**

caused by high nitrate contents of well water. —*Canad. J. comp. Med.* **18,** 93-101. **1128**

Following the occurrence of methaemoglobinaemia, suspected to be due to nitrite poisoning, in sheep which were supplied with water from a well, chemical tests on the water revealed a concentration of 2,790 p.p.m. of nitrate. Tests with this and with prepared samples of the same nitrate concentration revealed that a slow conversion to nitrite took place in the rumen and slow conversion of haemoglobin to methaemoglobin in the blood of sheep. Conversion rates vary, but a high nitrate content in water is potentially dangerous.

—R. GWATKIN.

LEE, A. M. (1953). **Our newer knowledge of bovine hyperkeratosis (X-disease).** — *Proc. 56th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 175-194. **1129**

A useful review of available knowledge on hyperkeratosis in the U.S.A. The factor responsible for the disease interferes with the normal utilization of vitamin A. What appears to be the same disease has been produced experimentally with highly chlorinated naphthalenes.

—D. LUKE.

COPENHAVER, J. S. & BELL, W. B. (1954). **The production of bovine hyperkeratosis (X-disease) with an experimentally made pellet feed.** —*Vet. Med.* **49,** 96-101 & 106. **1130**

Pairs of calves fed twice daily showed no signs of hyperkeratosis after 135 days when the lubricant used in the pellet mill rollers contained no chlorinated naphthalenes. When the lubricant contained 3% chlorinated naphthalenes the pellets produced symptoms of hyperkeratosis in 18 days.—A. SEAMAN.

OLSON, C., JR. & SKIDMORE, L. V. (1954). **Further observations on reproductive ability after recovery from bovine hyperkeratosis.** — *Vet. Med.* **49,** 371-374 & 376. **1131**

Two bull calves that had recovered from bovine hyperkeratosis grew normally and were fertile at sexual maturity. The epithelial metaplasia which occurs in the excretory ducts of the testes and accessory sex glands is reversible. Heifers representing a second generation in which hyperkeratosis was produced during calfhood also gave birth to normal calves.

—W. R. BETT.

HALL, W. T. K. (1954). **Zamia staggers in cattle.**—*Qd agric. J.* **79,** 173-177. **1132**

Zamia is the common name given to palm-like plants of the genus *Macrozamia* and to *Cycas media*. H. described in detail the symptoms of zamia staggers, consisting mainly of a loss of control over the movement of the hind limbs.

He gave an account of feeding experiments with cattle in which leaves of *M. spiralis, M. douglasii* and *M. paulo-guilielmi* were fed. All were shown to be toxic. There was some suggestion that the toxic agent in *M. spiralis* may be lost with drying, that a minimum daily dose has to be exceeded to produce symptoms, and that a minimum feeding period of nearly 20 days may be necessary before any effect is noticed. Examination of brain and spinal cord tissue and nerves (methods not given) failed to reveal the nature of the damage.

—R. I. SOMMERVILLE.

GARDNER, C. A. & BENNETTS, H. W. (1954). **Poison plants of Western Australia. The Birdsville indigo** (*Indigofera enneaphylla L.*). —*J. Dep. Agric. W. Aust.* **3,** 597-602. **1133**

A botanical description is given of Birdsville Indigo (*Indigofera enneaphylla* L.) which is widely distributed on sandy silts in tropical Australia. It is very palatable to stock, harmless to cattle and sheep, but in horses gives rise to a condition known as Birdsville disease.

This commonly develops within a few weeks of suitable rain, when the plants are growing quickly. Details of the symptoms are given. There is no effective treatment, and control depends on preventing horses from grazing the plant. This is often feasible because it tends to grow in restricted areas.

—R. I. SOMMERVILLE.

TRETHEWIE, E. R., GAFFNEY, F. M. & GLADWELL, P. J. (1954). **Pharmacological studies of grasses obtained from a property where "tall fescue lameness" in cattle occurs.**—*Aust. J. exp. Biol. med. Sci.* **32,** 207-211. **1134**

The authors failed to isolate a substance from *Festuca arundinacea* (tall fescue) which would account for the necrotic lesions of tall fescue lameness in cattle. However they found that the grass contained a pressor substance which acted on the intact animal by stimulating the adrenal gland. Rye grass (*Lolium perenne*) possessed this activity to an even greater degree.

The extract of grass is vaso-pressor in the intact cat, stimulant to the uterus of the cat, and rhythm inhibiting to the uterus of the virgin rat. There was no evidence that the response was due to an ergotamine type of substance.

—R. I. SOMMERVILLE.

PHILLIPSON, A. T. & REID, R. S. (1954). **Studies on the toxicity of bracken (*Pteris aquilina*).** — *J. comp. Path.* **64,** 243-259. [Authors' summary modified.] **1135**

Rumen sludge from normally fed heifers, when fed to rats at the rate of 8, 12 or 16% of the dry matter of a thiamin-deficient basal ration, contains enough thiamin to allow optimal or only slightly suboptimal weight gains to occur. Thiamin-deficient rats fed at the rate of 12% on a dry matter basis with sludge from the rumen of a bracken-fed heifer did not gain in weight. Thiamin-adequate rats grew normally even when dried bracken formed 40% of their ration, but made only small weight gains when bracken formed 60% of their rations. Rumen sludge from a bracken-fed heifer was less palatable to rats than similar material from a grass-fed heifer.

No clear signs of thiamin deficiency were observed in bracken-fed heifers that ultimately died from bracken poisoning.

BETTY, R. W. & MARKSON, L. M. (1954). **Liver biopsy in the diagnosis of ragwort (*Senecio jacobea*) poisoning in a herd of cattle.**—*Vet. Rec.* **66,** 398-400. **1136**

An account of ragwort poisoning in cattle. Cirrhosis of the liver was confirmed by liver biopsy.—R.M.

MCKAY, G. F. & LALICH, J. J. (1954). **A crystalline "lathyrus factor" from *Lathyrus odoratus*.** — *Arch. Biochem.* **52,** 313-322. [Authors' summary slightly modified.] **1137**

The purpose of the authors' study was to isolate the toxic factor from crude *L. odoratus* meal. Rats were used in assays, and the presence of skeletal deformities as revealed by X-ray was used as the criterion of lathyrus toxicity. A crystalline substance was isolated which produced bony changes exactly similar to those seen in rats fed toxic meal. The formula of the purified toxic factor was $C_8H_{13}O_3N_3$.

BAKER, C. J. L. & EDEN, A. (1954). **Studies on the oxalate contents of the leaves of certain varieties of *Beta vulgaris*.**—*J. agric. Sci.* **44,** 394-399. [Authors' summary modified.] **1138**

The authors studied the oxalate content of the leaves of mangolds and sugar beet. In all varieties greater concentrations of total oxalates were found during the summer months, the amounts diminishing gradually as the season advanced. Up to 12% was found in the dry-matter of mangold leaves and 9% in sugar-beet leaves in July, these levels falling to 3% by mid-winter. There is some evidence that these changes are due in part to loss of outer leaves. Roughly one-third of the oxalates were present in water-soluble form. The addition one part of chalk to 1000 parts of leaves was theoretically sufficient to render unavailable the soluble oxalates present during winter, but insufficient for leaves fed earlier in the season.

Wilting caused a small reduction in the soluble oxalate content of the leaves, but there were exceptions to this, apparently related to sampling periods rather than to varieties. Insoluble oxalates appeared to be unaffected by wilting and sometimes showed apparent increases in amount as a result of respiration losses of labile leaf constituents. The insoluble/soluble oxalate ratio was thus changed by wilting. The authors suggested that the undesirable effects sometimes resulting from the feeding of beet leaves to livestock may not be due to oxalates, but to other factors which are labile during wilting.

PALMER, R. (1954). Hautgangrän bei einem Rind. **[Necrosis of the skin—? photosensitization—in a cow.]**—*Tierärztl. Umsch.* **9,** 205-206. **1139**

P. described a necrotic condition confined strictly to the white markings on the skin of a calf at summer pasture. The condition appeared to have characters resembling photosensitization.—A.S.

JAQUES, R. & SCHACHTER, M. (1954). **The presence of histamine, 5-hydroxytryptamine and a potent, slow contracting substance in wasp venom.**—*Brit. J. Pharmacol.* **9,** 53-58. **1140**

The venom of the common wasp was found to have a histamine content of 16–20 mg./g., and a 5-hydroxytryptamine content of about 0·32 mg/g.; it also contained a potent substance —said to resemble bradykinin in its action— producing a delayed slow contraction of the g. pig ileum.—G. P. MARSHALL.

DAVIDOW, B., RADOMSKI, J. L. & ELY, R. (1953). **Excretion of heptachlor epoxide in milk of a dairy cow fed heptachlor.**—*Science.* **118,** 383-384. **1141**

The insecticide, heptachlor (1 or 3a, 4, 5, 6, 7, 8, 8-heptachloro-3a, 4, 7, 7a-tetra-hydro-4, 7-methanoindene) administered by mouth to a cow reached a maximum and constant level of excretion in the milk 9 days after the commencement of feeding. Only after 51 days did it disappear from the milk.—W. S. MARSHALL.

MOORE, E. N. & CARTER, R. D. (1954). **Toxicity of chlordane to turkey poults.**—*Poult. Sci.* **33**, 654 - 655. [Abst. from authors' summary.] **1142**

The authors found that an insecticide spray or spray residue containing 2% chlordane (a chlorinated naphthalene derivative) was highly toxic to turkey poults introduced to sprayed cages within a week of spraying.

BARAIL, L. C. (1954). **Toxicity of soaps and detergents.**—*Soap, N.Y.* **30**, No. 4, pp. 52-55. **1143**

B. discussed the irritant action of normal and abnormal constituents of soaps and anionic detergents on the skin and on the respiratory tract and outlined methods of treatment, prevention and prophylactic testing.

—G. P. MARSHALL.

See also absts. **952** (poisoning and photosensitization following bovine trypanosomiasis treatment); **965** (sulphonamide poisoning in chicks treated for coccidiosis); **1071** (lesions in organs of animals bitten by the black widow spider); **1084** (toxicity of phenothiazine for horses); **1225** (report, U.S.A.); **1233** (synopsis of forensic medicine and toxicology).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

SEXTON, W. A. (1953). **Chemical constitution and biological activity.** pp. xxiii + 424. London: E. & F. N. Spon, Ltd. 2nd revised and enlarged edit. Medium 8vo. 60s. **1144**

This book, now in its second edition, requires little endorsement for those who work in the biochemical field, and whose special interest may be chemotherapeutics.

The work is divided into two sections. Part I deals with general principles, and discusses physico-chemical factors, macromolecules, metabolite antagonism, effects of specific chemical groupings, and the modification of drugs by living organisms. Part II deals chapter by chapter with selected topics, including nicotinamide drugs and riboflavin, aneurin, *p*-aminobenzoic acid and the sulphonamide drugs, pyrimidines, purines and pterins, the vitamin B complex, the porphyrins, choline and derivatives, quinones and quinonoid substances, symbiosis, parasitism and antibiotics, some aspects of hormones, bactericides and fungicides, antiprotozoal drugs, insecticides and anthelmintics, cancer, plant growth regulators, and antigens and antibodies.—D. S. PAPWORTH.

AZARIN, M. E., FELDMAN, DRACH, E. M., SHAL'NEV, V. F., KAS'YANOV, V. I. & KROTKOV, B. E. (1952). **[Tissue therapy in veterinary practice. A symposium.]** — *Veterinariya, Moscow.* **29**, No. 8. pp. 55-58. [In Russian.] **1145**

An account of a symposium on tissue therapy (first described by *Filatov* [*V.B.* **17**, 2115]) at which six papers were read. I. "Tissue therapy in veterinary practice in the Poltava region." Azarin described the preparation of extracts of hepatic and testicular tissue and the subcutaneous injection of the products into cattle with *Trichomonas* infection, boars affected with sterility and also foals infected with strangles. II. "Tissue therapy for sterility." Feldman gave a similar account. III. "The use of tissue therapy in suppurative processes." Drach described the implantation of fragments of testicular tissue from bulls and boar, in conjunction with blood transfusion. IV. "Treatment of stricture of the milk cistern." D. also gave an account of the use of tissue therapy in conjunction with blood transfusion for this condition. V. "Tissue therapy in broncho-pneumonia of piglets." Shal'nev & Kas'yanov described the use of adrenal, splenic, hepatic and ovarian tissues, in conjunction with blood transfusion. VI. "Therapeutic use of tissue extracts". Kas'yanov & Krotkov described the use of extracts of animal organs and of an extract of the leaves of aloe as described by Filatov [*loc. cit.*] in the treatment of keratitis, conjunctivitis and cataract in horses, cattle and dogs; also in eczema and in rabies.

All the authors stated that they had obtained excellent results, recovery occurring in the great majority of cases and more quickly than with orthodox methods of treatment.

—F. A. ABBEY.

BERG, O. A. (1952). Aureomycin i hundepraksis. **[Aureomycin in dog practice.]**—*Nord. Vet.-Med.* **4**, 256-272. [In Norwegian. English and German summaries. Abst. from English summary.] **1146**

Aureomycin was effective in treatment of acute respiratory and urinary diseases in dogs.

—JOHN SEAMER.

LIDDLE, G. W., GIANSIRACUSA, J. E., CHILDS, A. W., ISLAND, D., WAECHTLER, H. & BENNETT, L. L. (1952). **A comparative study of the clinical and metabolic effects of ACTH**

derived from hogs, sheep, and cattle.—*J. Lab. clin. Med.* **40**, 1-9. **1147**

The authors examined the physiological activities of A.C.T.H. products prepared by five different firms from the pituitary glands of pigs, sheep and cattle.

All were equally effective in inducing remission of arthritic symptoms and in producing a number of metabolic effects.

The authors concluded that the products were for practical purposes identical.

—JOHN SEAMER.

—. (1953). **The effect of ACTH and cortisone upon infection and resistance. Symposium held at the New York Academy of Medicine, March 27 and 28, 1952.** [Edited by: SCHWARTZMAN, G.] pp. x+204. New York: Columbia University Press. **1148**

The volume reports the sixth symposium organized by the microbiology section of the New York Academy of Medicine. The respective papers presented are entitled:—General considerations concerning the role of the adrenal cortex in intermediary metabolism; The influence of adrenalectomy and cortisone treatment on certain enzymatic reactions in the rat; The effect of corticosteroids upon lymphoid tissue; The effect of cortisone upon repair processes in dense and loose connective tissue; Adrenal hormones and the development of antibody and hypersensitivity; Depression by cortisone of inherited and acquired resistance to infection and to tumour grafting; Constitutional factors in resistance to infection—the pathogenesis of tuberculosis; The mechanism of action of cortisone in experimental syphilis; The effect of cortisone in activating latent trypanosomiasis in rhesus monkeys; ACTH and cortisone effects on allergic diseases; Of cortisone on bacterial infection and intoxication; Observations on adrenal cortical hormones in pneumococcal and influenza viral infections and in malaria; Alteration of experimental poliomyelitis by means of cortisone with reference to other viruses.

The discussion following the papers is not included, contrary to custom in recent American symposia reports. Although the papers deal primarily with the effect of A.C.T.H. and cortisone upon infection and resistance, some space is given to general considerations of the action of the hormones, namely their effect upon metabolic functions and structural elements of the organism.—D. S. PAPWORTH.

MCCORRISTON, L. R. (1954). **Hydrocortisone (compound F) acetate ointment in eczema of infants and children.**—*Canad. med. Ass. J.* **70**, 59-62. **1149**

The author stated that the topical use of cortisone acetate ointment has been found to be without value in skin diseases. He, however, tested the value of local application of compound F on 109 infants and children with eczema and a family history of allergy and found that it was very effective.—R. GWATKIN.

KLAVANO, P. A. & JOHNSON, V. L. (1954). **Nalorphine hydrochloride as a narcotic antagonist in dogs.** — *J. Amer. vet. med. Ass.* **125**, 399-400. [Authors' summary modified.] **1150**

"Nalorphine" (*N*-allylnormorphine), injected i/v at a dosage of 1 mg./5 lb. body wt. effectively counteracted the depression in dogs caused by morphine, dihydromorphine, pethidine, and amidone.

ICHIHARA, T., ISHIDA, H., ICHIHARA, T., NEKOYADA, Y. & MURAKATA, M. (1952). **[The study on chick-embryo technics. I. The effect of various disinfectants on the developing power of eggs.]**—*Jap. J. vet. Sci.* **14**, 299-310. [In Japanese. English summary.] **1151**

The viability of chick embryos was unimpaired after the eggs had been immersed in water for 48 hours, in 1–5% cresol for 15 min., in 1–10% sodium hydroxide for 15 min., in 1–10% formol for 30 min., in 3·5% carbolic acid for 30 min. or in 70% alcohol for 30 min.

—KOGI SAITO.

DYBING, O. (1953). Anestesi hos husdyr. **[Anaesthesia of domestic animals.]** — *Nord. VetMed.* **5**, 933-942. [In Danish.] **1152**

A review of the use in veterinary anaesthetic practice of ether, chloroform, nitrous oxide, unnamed soporifics, chloral hydrate, tribromethanol, barbiturates and thiobarbiturates, anavenol and morphine. Curarizing drugs were also mentioned.—J. EDWARDS.

PALMER, J. R., HAYES, F. A. & DORSEY, N. S. (1954). **Simplified intratracheal anaesthesia.** —*N. Amer. Vet.* **35**, 443-446. **1153**

This method of anaesthesia for dogs consists of premedication with morphine and atropine, induction of anaesthesia with ether, using the cone-shaped standard mask, and maintaining anaesthesia with ether through a soft rubber tube passed into the trachea through the mouth. At mouth level the tube passes

through a wooden gag which protects it from the teeth. The tube is attached to a can of ether provided with air holes so that ether vapour is drawn off by the dog's respiratory movements, which are said to be automatic and self-regulating.—J. EDWARDS.

See also abstr. **890** (antibiotics & sulphonamides in glanders); **895** ("sulphantrol"); **898** (A.C.T.H. in Bact. coli mastitis); **908** (furazolidone in fowl typhoid); **921 & 922** (penicillin in fowl spirochaetosis); **930** (resistance to antibiotics of mastitis organisms); **932** (inhibition of microorganisms by raw milk); **933** (killing of microorganisms by low concentrations of penicillin); **936** (treatment of coccidiomycosis); **937** (action of antibiotics on C. albicans); **941** (ringworm); **950** (suramin-pentamidine); **952 & 953** (trypanosomiasis); **959** (A.C.T.H. in blackhead); **965 & 966** (coccidiosis); **970** (East Coast fever); **971** (PAA-701); **1044** (xerosin); **1063** (chlorinated hydrocarbon insecticides); **1064** (gamma B.H.C.); **1092-1096** and **1105** (antibiotics and other growth stimulants); **1117** (propylene glycol in ketosis); **1142** (toxicity of chlordane for turkeys); **1169-1171** (effect of A.C.T.H. on perfused bovine adrenals); **1132** (British Pharmaceutical Codex 1954); **1236** (textbook, surgery); **1237** (book, caesarian section).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

HINES, H. J. G. (1954). **Some biochemical aspects of reactions to heat and cold.**—*Proc. roy. Soc. Qd.* **64,** 1-14. **1154**

H. reviewed work on the biochemistry of the generation and regulation of body heat in homoiothermic animals, and the effects on them of exposure to heat and cold.

—R. I. SOMMERVILLE.

KUDO, N. (1953). **[Studies on the red lymphonodus. I. Macroscopical observations on the red lymphonodus in goats.]** — *Vet. Res., Japan.* **1,** 97-110. [In Japanese. English summary.] **1155**

The author examined the number, size, colour, form and localization of the haemolymph nodes of 25 goats and classified them into 36 types.—KOGI SAITO.

FAWCETT, D. M. & KIRKWOOD, S. (1954). **Role of the salivary glands in extra-thyroidal iodine metabolism.**—*Science.* **120,** 547-548. **1156**

Anaesthetized rats, from which the salivary glands had been removed, showed negligible loss of intravenously injected di-iodotyrosine when controls had $< 50\%$ remaining in the circulation, confirming the authors' "reverse thyroid" hypothesis of salivary gland function.

—P. H. HERBERT.

TEMPESTINI, E. & MESSINA, G. (1954). Ricerche sulle proteine e sul metabolismo proteico della polpa dentaria. II. Sulla presenza di amino-acidi liberi nella polpa dentaria di bue e di uomo. **[Proteins and protein metabolism of dental pulp. II. Free amino acids in the dental pulp of cattle and human beings.]**—*Boll. Soc. ital. Biol. sper.* **30,** 897-898. **1157**

The authors found the following amino acids in the dental pulp of cattle as well as in that of human beings:—alanine, aspartic acid, glutamic acid, glycine, leucine, phenylalanine, proline, serine, taurine, threonine, tyrosine, valine.—R.M.

POPJÁK, G. & TIETZ, A. (1954). **Biosynthesis of fatty acids by slices and cell-free suspensions of mammary gland.**—*Biochem. J.* **56,** 46-54. **1158**

Slices and cell-free suspensions of lactating rat and sheep mammary gland were examined for fatty synthesis from acetate. In such tissue slices, especially those of sheep udder, fatty-acid synthesis from acetate was stimulated not only by glucose, but also by pyruvate and by members of the citric acid cycle. Cell-free suspensions of mammary gland from sheep were capable of synthesizing fatty acids from acetate without chemical stimulation. Rat suspensions were inactive unless chemically stimulated, but a range of n fatty acids was produced. The authors discussed the chemical and species differences.—JOHN SEAMER.

TAPERNOUX, A., MAGAT, A. & GONNET, M. (1954). Les principes de la méthode électrophonétique. Applications aux serums des animaux domestiques. **[Electrophoresis of sera of domestic animals.]**—*Rev. Méd. vét.* **105,** 402-412. **1159**

T. described an examination of the serum composition of three healthy dogs, using paper chromatography. No new material.—A.S.

EGGLETON, P. & FEGLER, G. (1952). **The oxidation of oxyhaemoglobins from different animal species.**—*Quart. J. exp. Physiol.* **37,** 85-89. **1160**

When oxyhaemoglobin solutions from horse, ox, and dog blood are tested with enough iodine to produce 50% oxidation of the haem, the globin reduces 2 equivalents of iodine in the horse, 4·5 in the ox, and 6·5 in the dog.

—W. R. BETT.

NATT, M. P. & HERRICK, C. A. (1954). **Variations in the shape of the rod-like granule of the chicken heterophil leucocyte and its poss-**

ible significance. — *Poult. Sci.* **33,** 828-830. [Abst. from authors' summary.] **1161**

The granules of heterophile leucocytes of fowls are normally rod-like in appearance, but they sometimes break up when stained by the Romanowsky method. The rod-like granules contain an inner spherical granule which is not altered by staining, and this imparts an abnormal spherical appearance to the heterophile granule. As a result it may be difficult to distinguish the heterophile from the eosinophile leucocyte of fowls.

NAKAMURA, R. (1952). **[Clinical and hematological studies upon the changes in the course of the whole-bleeding (phlebotomy) in tetanus hyperimmunizing horses. I. Clinical observations. II. Hematological observations.]**— *Jap. J. vet. Sci.* **14,** 205-214 & 215-224. [In Japanese. English summaries.] **1162**

I & II. An account of symptoms observed and the blood picture from the moment of severing the carotid artery or the jugular vein to the death of the horse.—KOGI SAITO.

MAZZELLA, H. & MIGLIARO, E. F. (1953). **Hemodynamics of the carotid sinus and its repercussion on the pressor reflex.**—*Amer. J. Physiol.* **175,** 383-385. **1163**

After occlusion of the common carotid arteries in vagotomized dogs, the drop in the intrasinal pressure was maintained only if both sinuses were denervated. Additional clamping of the external carotid arteries markedly reduced the systemic hypertension, tachycardia and splenic contraction.—A. ACKROYD.

BRUNAUD, M. & NAVARRO, J. (1953). Action sur la motricité des estomacs du mouton de substances inhibitrices des cholinestérases néostigmine et 309 C. **[Action of anti-cholinesterases on the motility of the stomachs of sheep.]** — *Bull. Acad. vét. Fr.* **26,** 589-596. **1164**

The action of "neostigmine" (the dimethyl carbamic ester of 3-hydroxyphenyl-dimethylamine) and of "309C" (an oxyphenyl-diethyl-methyl ammonium salt) on the stomachs of sheep was similar in that small doses increased the amplitude and frequency of the contractions of the reticulum and rumen. Larger doses (0·1 mg./kg.) caused a loss of rhythm.

—A. SEAMAN.

MOHAMED, M. S. & GREENBERG, D. M. (1954). **Isolation of purified copper protein from horse liver.**—*J. gen. Physiol.* **37,** 433-439. **1165**

An account of a technique for isolating from horse liver a blue-green copper protein (copper content 0·3–0·4%) in apparently crystalline state.—W. R. BETT.

AMOROSO, E. C., BELL, F. R. & ROSENBERG, H. (1954). **The relationship of the vasomotor and respiratory regions in the medulla oblongata of the sheep.** — *J. Physiol.* **126,** 86-95. [Authors' summary copied *verbatim.*] **1166**

The myelencephalon of the sheep was explored with stimuli from bipolar electrodes carried out by a stereotaxic instrument, the respiratory and vasomotor responses being recorded. The optimal stimulus of 8·3 V at 252 stimuli/sec was used. Respiratory responses can be evoked on stimulation of the reticular formation of the medulla oblongata between the levels of the acoustic tubercle rostrally to the obex caudally. Maximal inspiratory responses occur when the medio-ventral reticular formation above the inferior olive anterior to the obex is stimulated. Maximal expiratory responses were elicited dorsal, anterior and lateral to the inspiratory region. Vasopressor responses of large magnitude predominate in the reticular formation of the rostral third of the medulla, but in the middle third they decrease in magnitude and become more restricted to the lateral reticular formation. Depressor responses are confined to a medial area extending 1–2 mm anteriorly from the obex. This reactive field included not only part of the medial reticular formation, but also part of the periventricular grey matter. The areas of cardiovascular and respiratory reactivity to electrical stimuli show considerable overlapping. The relationship of cardiovascular and respiratory responses shows that the neurones of these systems are not separable into anatomical entities, although the function of each system remains independent.

PEARLMAN, W. H. & CERCEO, E. (1953). **The estimation of saturated and α, β-unsaturated ketonic compounds in placental extracts.**—*J. Biol. Chem.* **203,** 127-134. **1167**

The authors described a micro-chemical procedure for the estimation of α, β-unsaturated ketonic compounds in extracts of human placental tissue.—JOHN SEAMER.

BENGTSSON, L. P. (1954). **Absorption of phosphorus-32 from the rabbit vagina under various hormonal conditions.** — *Nature, Lond.* **173,** 954-955. **1168**

Intravenous administration of 5,000 I.U. oestrone increased the rate of absorption of P^{32} from the vagina of rabbits. Stable blood activ-

ity of P^{32} was attained by this means, but the results were variable.—F. R. PAULSEN.

I. MACCHI, I. A. & HECHTER, O. (1954). **Studies of ACTH upon perfused bovine adrenals : corticosteroid biosynthesis in isolated glands maximally stimulated with ACTH.** — *Endocrinology*. **55,** 387-402. **1169**

II. MACCHI, I. A. & HECHTER, O. (1954). **Studies of ACTH action upon perfused bovine adrenals : minimal ACTH concentration requisite for maximal glandular response.**—*Ibid.* 426-433. **1170**

III. MACCHI, I. A. & HECHTER, O. (1954). **Studies of ACTH action upon perfused bovine adrenals: duration of ACTH action.**—*Ibid.* 434-438. [Authors' summaries modified] **1171**

I. The authors demonstrated that the adrenal gland of cows perfused with homologous citrated blood responded to added A.C.T.H. by a 10 to 19 fold increase in corticosteroid production. The magnitude of corticosteroid output, both in the absence and presence of A.C.T.H. was markedly influenced by the method of preparing glands for perfusion. The venous cannulated lacerated gland produced about 7 times more corticosteroid per unit time per g. gland than arterially perfused preparations in the presence of A.C.T.H., and about 4 times more corticosteroid in the absence of A.C.T.H. The response of glands from steers to A.C.T.H. was poor compared with glands from cows. They compared the results of their work with other studies of the adrenal gland *in vitro*.

II. In perfused adrenal gland preparations from cows 0·001 I.U. A.C.T.H. per l. of citrated blood evoked a definite increase in corticosteroid production. Increasing conc. of A.C.T.H. increased the magnitude of this response and maximal corticosteroid production was achieved at 0·1 I.U. A.C.T.H. per l. There was a latent period of about 18 min. before maximal corticosteroid response was obtained.

III. Following stimulation of the perfused preparation of the bovine adrenal gland with maximal conc. of A.C.T.H. there was a retention of a portion of the A.C.T.H. effect despite its removal from the circulation. Corticosteroid production (relative to that attained with A.C.T.H.) was 45% at 18–36 min. and 18% at 126–144 min. after withdrawal of A.C.T.H. from the system. The authors briefly discussed the significance of these findings.

BROWN-GRANT, K., VON EULER, C., HARRIS, G. W. & REICHLIN, S. (1954). **The measurement and experimental modification of thyroid activity in the rabbit.**—*J. Physiol.* **126,** 1-28. [Abst. from authors' summary.] **1172**

The authors studied the general distribution of radio-active iodine, ^{131}I, after i/v injection in the rabbit. They described methods for measuring thyroid activity in the conscious rabbit. A method based on the release of ^{131}I from the thyroid gland was found to have many advantages over that involving measurement of the uptake of ^{131}I. Using the release method, they studied the effects of administration of thyrotrophic hormone and thyroxine, exposure to cold and hypophysectomy on thyroid activity in the rabbit.

See also abstr. **1097** (microbial fermentation in the bovine rumen); **1229** (book, physiology); **1230** (animal histochemistry and cytochemistry); **1231** (book, shock and circulatory homeostasis); **1238** (Pavlov's life & work).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

BARRESI, E. & DI LEO, S. (1954). Osservazioni sull'andamento irregolare dei processi di acidificazione e di glicolisi nelle carne bovina. **[Irregularities in the processes of acidification and glycolysis in beef.]**—*Boll. Soc. ital. Biol. sper.* **30,** 825-827. **1173**

The normal increase in acidity which occurs within 48 hours of slaughter, did not occur in the flesh of three calves and a cow slaughtered while affected with poisoning due to the ingestion of sorrel (*Oxalis cernua*).—R.M.

KORKHAUS, R. (1954). Zur Frage der Schlachtung von Hunden. **[The slaughtering of dogs for food.]**—*Dtsch. tierärztl. Wschr.* **61,** 347-350. **1174**

On behalf of two animal protection societies K. recommended the introduction of legislation in Germany to prevent the slaughter of dogs and cats for food. He stated that a number of illicit slaughter-houses for these animals existed, but that under existing regulations it was difficult to prefer charges against the owners.—A.S.

ARTYUKH, I. A. (1954). **[Development of veterinary science in the Ukraine.]** — *Veterinariya, Moscow.* **31,** No. 1, pp. 10-16. [In Russian.] **1175**

The teaching of veterinary science in the Ukraine began in 1805, with the foundation of a lectureship in "Medicine of domestic animals" at the Medical Faculty in Kharkov.

Veterinary science is now taught at 3 major educational centres: the Veterinary Institute in Kharkov and the Veterinary Institutes in Kiev and in Lwov. In addition there are veterinary lectureships (microbiology, veterinary hygiene, etc.) at the Agricultural Institutes in Odessa and Byela Tserkva and at the Zootechnical Institute in Kharkov.—I. MARTINI.

See also absts. **868** (anthrax in carpet wool industry workers in the U.S.A.); **873** (legal aspects of TB. in man, contracted from infected carcasses & skins); **911** (food industry personnel as carriers of S. paratyphi B); **1128** (nitrate poisoning in cattle from well water); **1222** (report, India); **1235** (book, control of rats & mice).

LIVESTOCK HYGIENE

SMITHARD, E. H. R. (1954). **The 1952 fog in a metropolitan borough.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **13,** 26-35. **1176**

S. gave an account of the effects of the severe fog which occurred in 1952 in a London borough and referred to the peculiar atmospheric and other conditions in the area.

—W. S. MARSHALL.

BEAUDETTE, F. R. (1953). **Tests of the efficacy of a textile bag sanitizing machine.**—*Proc. 56th Ann. Meet. U.S. live Stk sanit Ass.*, 1952. pp. 269-274. [Abst. from author's summary.] **1177**

An account of tests of an apparatus for the steam sterilization of sacks to be used for foodstuffs. Infectious agents such as fowl pox and Newcastle disease viruses, *Salmonella gallinarum* and *Erysipelothrix rhusiopathiae*, as well as *Sarcina* were destroyed in sacks passed by means of a conveyer belt under jets of steam at 50, 75, or 90 lb. pressure. The steam treatment was ineffective against bacterial spores.

REPRODUCTION AND REPRODUCTIVE DISORDERS

MACPHERSON, J. W. (1954). **The effect of storage time on frozen bovine semen.**—*Canad. J. comp. Med.* **18,** 323-325. **1178**

Semen collected from two bulls was diluted 1:40 in whole milk then glycerol added to 10% by volume. The mixture was frozen at −79°C. and samples used at various times after storage. Pregnancies were obtained up to 15 months.

—CHAS. A. MITCHELL.

KOK, J. C. N. (1954). Het vergelijken van spermaverdunningsmiddelen in de praktijk. **[The comparison of semen diluents in the field.]** — *Tijdschr. Diergeneesk.* **79,** 822-828. [English, French and German summaries.] **1179**

Some rules are given for a valid comparison of bull semen diluents based on the conception rate. It is necessary that the split sample method be applied to all the ejaculates used.

—C. A. VAN DORSSEN.

HENDRIKSE, J. & JOLING, K. F. (1954). De geheel-ei-citraatverdunner. **[Citrated whole egg diluent for semen.]**—*Tijdschr. Diergeneesk.* **79,** 133-140. [English, French and German summaries.] **1180**

In comparative tests using a whole egg-citrate diluent as described by Dunn [*V.B.* **20,** 3394] and an egg yolk-citrate diluent, it was found that the motility and viability of spermatozoa were better, there was less sediment and the number of micro-organisms was lower with the former diluent.—C. A. VAN DORSSEN.

BUCKNER, P. J., WILLETT, E. L. & BAYLEY, N. (1954). **Laboratory tests, singly and in combination, for evaluating fertility of semen and of bulls.** — *J. Dairy Sci.* **37,** 1050-1060. [Authors' summary modified.] **1181**

The authors studied the relationships between non-return rates and single tests, or combinations of tests, for measuring quality of semen, based on data from more than 33,000 inseminations. The only significant correlations were between non-return rate and (a) motility of spermatozoa after incubation at 38°C. in yolk citrate plus antibacterial agents, and (b) the combination of methylene blue reduction time, drop in progressive motility after 120 min. in 3% aniline blue solution at 4°C., and initial total motility in yolk-citrate-sulphanilamide diluent.

The authors concluded that the possibility of estimating differences in fertility among a group of bulls was more promising than estimating differences among individual semen samples.

AEHNELT, E. & ROSENWINKEL, B. (1953). Über den Stand der Verdünnung und Aufbewahrung des Ziegenspermas. **[Dilution and storage of goat semen.]** — *Fortpfl. Besamung Haustiere.* **3,** 68-72. [English summary.] **1182**

Two commercial semen diluents "spermasol" (a buffered gelatin-citrate mixture) and "dilopten" (a buffered organic phosphatide-glucose-citrate mixture), were tested with goat semen. The former in a dilution of 1:6 with

the addition of 3% egg yolk proved very satisfactory, being 15% more efficient than the latter.—E. J. L. Soulsby.

Mazzaccara, A. (1954). Il liquido prostatico degli arieti deferentomizzati come mestruo per la diluizione dello sperma destinato a fecondare artificialmente un gran numero di pecore. **[Prostatic fluid of vasectomized rams as diluent for ram semen.]**—*Zootec. e Vet.* **9,** 166-167. **1183**

As an emergency measure during the second world war prostatic fluid, after microscopic examination to ensure absence of semen, was used as a diluent with good results. Large amounts can be obtained by electrical orgasm.

—R. G. Mares.

Ortavant, R. (1954). Détermination de la vitesse de transfert des spermatozoïdes dans l'épididyme de bélier à l'aide de ^{32}P. **[Speed of passage of spermatozoa through the epididymis of the ram.]**—*C. R. Soc. Biol., Paris.* **148,** 866-868. **1184**

In Ile-de-France rams it takes approx. 20 days for spermatozoa labelled with ^{32}P to pass through the epididymis. Sometimes it is necessary to wait two months before modifications in spermatogenesis due to external or internal factors, can be observed in the ram's ejaculation.—W. R. Bett.

VanDemark, N. L. & Hays, R. L. (1954). **Rapid sperm transport in the cow.**—*Fertil. & Steril.* **5,** 131-137. **1185**

The stimulus of natural mating or artificial insemination in the cow causes the release of oxytocin, which increases uterine tone and motility. Uterine patterns similar to those which occur with natural mating follow the i/v injection of oxytocin and are inhibited by adrenaline.—W. R. Bett.

Cupps, P. T., Laben, R. C. & Mead, S. W. (1954). **Histology of the pituitary, testis, and adrenal in relation to reproduction in the bull.** —*J. Dairy Sci.* **37,** 1074-1087. [Authors' summary modified.] **1186**

On the basis of histological changes in the pituitary, adrenal, and testis, the authors described three syndromes related to impaired fertility in the bull. The first syndrome, found in one bull, appeared to be a deficiency of the basophilic tissue in the anterior lobe of the pituitary.

The second type of syndrome was found in 4 bulls. The large beta cells of the pituitary were normal, but many of the small beta cells showed hyaline degeneration. The glomerular and fascicular zones of the adrenal cortex were narrow, but the reticularis showed hyperplasia. The testis showed faulty spermatogenesis with degeneration of some tubules and normal interstitial tissue. The conc. of spermatozoa in the semen was reduced, most of them were dead, and many abnormal. The libido and seminal fructose were normal.

Six bulls were grouped into a third syndrome in which the large beta cells were increased in number and size and the alpha cells were sparse, many of them lacking granules. The small beta cells increased in number and appeared to be functional in one of the bulls. In the other bulls these cells were either normal, or showed degenerative changes, or were not differentiated. Small tumours in the fasciculata of the adrenal were present in 2 bulls, and hyperplasia of the adrenal cortex accompanied by degenerative changes in the individual cells was present in 4 others. Libido in these bulls was normal or reduced. Motility of the spermatozoa was low, and fertility was impaired. The histology of the testis indicated that spermatogenesis had ceased in one bull.

The pituitary adrenal, and testis from two normal bulls, the pituitary from a steer, and the testis from an immature calf were studied for standards of comparison with the low-fertility bulls.

Newcomer, E. H. & Brant, J. W. A. (1954). **Spermatogenesis in the domestic fowl.**—*J. Hered.* **45,** 79-87. **1187**

The authors studied behaviour of the chromosomes in cells of the testicles of the fowl during spermatogenesis. They found that the chromosomes could be divided into two groups: macrochromosomes and accessory chromosomes. The number of chromosomes was not constant, because of fusion and fragmentation exhibited by accessory chromosomes.

—R.M.

Sykes, A. H. (1953). **Some observations on oviposition in the fowl..** — *Quart. J. exp. Physiol.* **38,** 61-68. [Author's summary modified.] **1188**

Six out of 9 hens were able to lay their eggs after spinal transections, but the process took much longer than normally. Ovulation was almost completely inhibited in these hens. By means of laparotomy, S. observed that the uterus was not everted, as claimed by Wickmann (1896), and that the egg passed from the uterus to the vagina and from thence was laid by the peristaltic action of the vaginal muscles. He suggested that the abdominal muscles are used in normal egg-laying.

GIER, H. T. (1954). **Effect of chlorophyll derivatives on mating odors of dogs.**—*Vet. Med.* **49,** 377-380 & 391. **1189**

Bitches given 4 mg./kg. body wt. of chlorophyll derivatives per day had little attraction for males. Those given less than 3 mg. had normal odour attraction. The effectiveness of chlorophyll starts within 24 hours and lasts more than 24 hours.—W. R. BETT.

NEWBERNE, P. M. & HAYES, F. A. (1954). **Cesarean section in the South American chinchilla.**—*Vet. Med.* **49,** 246-248. **1190**

The authors described the technique and possible complications of Caesarian section in the chinchilla. The procedure is simple, and, in view of the animal's high value, should be practised when necessary. Adequate exposure and removal of all fragments of foetal membranes are important. A through and through muscle peritoneal, and a continuous subcutical suture should be used to close the abdomen.

—A. ACKROYD.

LEGATES, J. E. (1954). **Genetic variation in services per conception and calving interval in dairy cattle.**—*J. Anim. Sci.* **13,** 81-88. **1191**

L. reported data which indicate that the application of genetic principles in selection for fewer services per conception or for a shortening of the length of calving interval has little to offer the dairy cattle breeder.—A. ACKROYD.

SATO, Y. & MURAMATSU, T. (1953). **[The use of Japanese frogs in the diagnosis of pregnancy. III. Studies on the diagnosis of pregnancy of mares using the male *Rana nigromaculata* Hallowell.]**—*Jap. J. vet. Sci.* **15,** 71-76. [In Japanese. English summary pp. 77-78.] **1192**

The authors performed pregnancy diagnosis tests using male Japanese frogs (*R. nigromaculata*) and serum from 10 mares 49–96 days pregnant. Sera from only 5 of the mares gave positive results. Better results were obtained using extracts of serum prepared by the method described by Cartland & Nelson (1937).

—KOGI SAITO.

EAST, J. (1954). **The oestrogenic activity of some leguminous plants.**—*J. Endocrin.* **10,** No. 3, pp. viii-ix of Proceedings. O.a.g. **1193**

Psoralea corylifolia seed powder, tested on 20 female mice, produced intense persistent vaginal cornification within 5 days of the start of feeding: 85% of matings were infertile while the seed was fed, and normal breeding efficiency returned when it was withdrawn from the diet.—F. L. M. DAWSON.

CHENG, E., YODER, L., STORY, C. D. & BURROUGHS, W. (1954). **Estrogenic activity of some isoflavone derivatives.** — *Science.* **120,** 575-577. **1194**

The authors synthesized four isoflavone derivatives—genistein, biochanin A, daidzein, and formononetin—and found each of them to possess oestrogenic activity when fed to mice at approx. 2·5 mg. daily. Formononetin was the least active of the compounds, probably because it possessed only one free hydroxyl group while the other substances in the study had 2 or 3. Isoflavone compounds can exert an important influence on physiological functions.—A.S.

PAREDIS, F. & VANDEPLASSCHE, M. (1953). **Intrafollicular administration of pregnancy urine hormone (P.U.) as a treatment for nymphomania in dairy cattle.** — *Proc. XVth Int. vet. Congr. Stockholm,* 1953. Part I. Vol. 2. 738-842. Discussion: Part II p. 331. [In English. French and German summaries.] **1195**

The authors consider the intrafollicular injection by the rectal route of 250–1,000 I.U. of pregnancy urine hormone to be an advance over other treatments for nymphomania in cattle. Of 80 cows so treated, 52 became pregnant to 59 services: 87% developed luteal tissue 10–29 days after treatment.—JOHN SEAMER.

WALLACE, L. R. (1954). **Studies in the augmentation of fertility of Romney ewes with pregnant-mare serum.**—*J. agric. Sci.* **45,** 60-79. [Abst. from author's summary.] **1196**

The magnitude of the ovulation response to pregnant mares' serum (P.M.S.) treatment depended to some extent on the batch of P.M.S. used and the strain of ewes employed. The nutritive status of ewes was not an important factor in determining the ovulation rate following P.M.S. treatment. When the hormone was administered 5 days or less before the onset of the subsequent oestrus, good conception rates were obtained, but extremely poor conception rates resulted when animals were treated more than 5 days before oestrus. Best ovulation and conception rates were obtained when the treatment-to-oestrus interval was 2–3 days. For optimum results, W. recommended treatment on the 14th day of the oestrus cycle. However, good results were also obtained after treatment on the 12th–13th days. Treatment on the 15th day was also reasonably satisfactory.

When ovulated in normal numbers, and provided conception occurred, ova produced as a result of P.M.S. stimulation were no more prone to fail to undergo normal embryonic de-

velopment than were naturally ripened ova. When Romney ewes were stimulated by P.M.S. treatment to ovulate 4 or more ova, failure of fertilization and/or early embryonic mortality was usually, but not always, effective in reducing the number of embryos which survived the first month of pregnancy to 3 or fewer. By judicious choice of the amounts of hormone administered it was possible to induce multiovulation in a very high proportion of ewes, without causing the majority to shed more than 3 eggs. For field trials with mature Romney ewes, he recomended the injection of 650–1000 I.U. of P.M.S. on either the 12th, 13th, 14th or 15th days of the oestrous cycle.

MONROE, S. R., JR. (1953). **Epididymography, a possible aid in the diagnosis of sterility in the male. Preliminary report.**—*Auburn Vet.* **10,** No. 1, pp. 29-34. **1197**

M. described the technique of radiography of the epididymis using a 50% aqueous solution of a contrast medium "diodrast". Radiographs from different animals appear to be similar, except for minor differences in size. It is hoped that this technique will open new approaches to the problem of sterility in domestic animals.—J. A. NICHOLSON.

SCHULTE, F. & EHRLICH, J. (1954). Impotentia generandi eines Jungbullen infolge Acrosomdefektes der Samenzellen. **[Abnormalities of the acrosome of spermatozoa as a cause of sterility in a bull.]** — *Forpfl. ZuchtHyg. Haustierbesamung.* **4,** 90-94. [English summary.] **1198**

The authors investigated the semen of a young Dutch bull with a history of sterility. Fifty to 85% of the spermatozoa had defects of the acrosome, and the activity and viability of the semen were poor. Cross sections of the testis revealed disturbed spermatogenesis.—A.S.

KIDWELL, J. F., WALKER, LEG. & MCCORMICK, J. A. (1954). **Hereditary female sterility in Holstein-Friesian cattle.**—*J. Hered.* **45,** 142 & 145. **1199**

The authors presented an analysis of female sterility occurring in the University of Nevada Newlands Field Station Holstein-Friesian herd at Fallon. The findings lent support to the evidence presented by Gregory *et al.* [*Genetics,* **1945, 30,** 506-517] of a specific sex-limited autosomal recessive gene conditioning female sterility in Jersey and Holstein-Friesian cattle. —W. R. BETT.

BUTZ, H. & SCHMAHLSTIEG, R. (1953). Ergebnisse einer 15 jährigen Erbfehlerforschung bei unseren Haustieren. **[Hereditary malformations in domestic animals.]**—*Mh. VetMed.* **8,** 295-299. **1200**

Breeding experiments have confirmed that three-leggedness in foals and epilepsy in rabbits and pigs are due to hereditary factors. Also included in this category are such conditions as leglessness in foals, spastic spinal paresis in cattle, atresia coli in horses, atresia ani et recti in pigs, etc. These conditions represent a loss which can only be overcome by means of a rigid selection of breeding animals. —J. A. NICHOLSON.

COLLET, P. & STAHL. (1952-53). Cardiopathie congénitale avec cyanose (maladie bleue) chez un veau nouveau-né. **[Congenital cardiac anomalies causing cyanosis in a new-born calf.]**—*Bull. Soc. Sci. Vét. Lyon.* **54** & **55,** 333-339. **1201**

An account of a congenital cardiac abnormality in a new-born Friesian calf, in which aortic and pulmono-aortic trunks arose from a hypertrophied right ventricle; interventricular communications were present and the left heart was atrophied and showed mitral stenosis. —M. B. HAWKSLEY.

KERSTEN, W. (1954). Rückenmarksmissbildung beim Hund und Menschen. **[Malformations of the spinal cord in dog and man.]**—*Dtsch. tierärztl. Wschr.* **61,** 338-346. **1202**

A report on duplication of the spinal cord in a dog and in a man.—A.S.

TANSLEY, K. (1954). **An inherited retinal degeneration in the mouse.**—*J. Hered.* **45,** 123-127. **1203**

T. described a hereditary retinal degeneration in mice which is inherited as a Mendelian recessive character. The retinae develop normally until almost the adult stage when the rods degenerate. He discussed the relationship of this condition to hereditary retinal degeneration in rats and dogs and to retinitis pigmentosa in man. In the mouse it is distinguished by the absence of cataract.—W. R. BETT.

See also abstr. **895** (abortion in goats caused by E. monocytogenes); **913-920** (brucellosis); **928** & **929** (V. fetus); **957** & **958** (trichomoniasis); **1003-1004** (equine virus abortion); **1107** (effect of trace elements on suckling & pregnant bitches).

ZOOTECHNY

SCHLEITER, H. [Direktor des Instituts für Huf- und Klauenkunde der Karl-Marx-Universität Leipzig.] (1953). Klauenpflege beim Rind. Leitfaden für Klauenpfleger und Landwirte. **[Trimming the hooves of cattle.]** pp. 46. Leipzig: S. Hirzel. DM 3.30. **1204**

Cattle farriery is an established occupation in Germany, and this little book is intended for those undergoing instruction in the care of the hooves of cattle. Although the illustrations give the impression that the handling of the limbs of cattle is as easy as of those of horses, the author rightly points out that not all cattle are so docile as to allow their feet to be handled with little restraint. The technique of cutting and trimming the hoof is clearly described and illustrated, but it is the opinion of the reviewer that the restraint applied to the cattle while this is being done is quite inadequate for, at least, most cattle in Great Britain. There should have been some mention of recourse to casting, possibly with general anaesthesia, to control difficult animals.—R.M.

LOCKART, L. W. & PHILPOTTS, H. R. (1954). **Fleece density grading of Merino sheep.**—*Aust. vet. J.* **30,** 262-265. **1205**

Two experienced sheep classers classed one group of Merinos each for the character known as fleece "density", thus attempting to assess the relative numbers of fibres per unit area of skin of different sheep. Measurements were made on a number of fleece characters in mid-side samples from the same sheep, and the correlations of these with the "density" gradings were calculated. It was concluded that "density" is the result of the interaction of several characters, chiefly the degree of skin folding, the percentage of skin covered by fibre, and the "handle" of the wool. The observers differed in the relative weightings of these characters. "Density" was correlated with fleece weight.—M. H. HARDY.

HICKMAN, J. (1954). **The electrical stunning of animals prior to slaughter.**—*Vet. Rec.* **66,** 498-501. [Author's summary modified.] **1206**

H. discussed the development of suitable electrical stunning apparatus for animals, and the considerations that have to be taken into account in their design. He described the "Elther" stunning apparatus for animals, and the effects and efficiency of electrical stunning by this apparatus. [See also *V.B.* **21,** 884.]

ROBERTS, T. D. M. (1954). **Cortical activity in electrocuted dogs.** — *Vet. Rec.* **66,** 561-567. [Author's summary modified.] **1207**

R. studied the electrocution of dogs in a type of cabinet commonly used for the routine destruction of dogs and cats. The electroencephalogram (E.E.G.) recorded shortly after the electric shock indicated that, although some dogs developed a fit, in most cases no significant change in the pattern of the E.E.G. occurred until about 12 sec. from the beginning of the shock. Records of electrocardiogram and of intracranial pressure indicated that the heart stopped pumping when the current was switched on. In another set of experiments, R. found that compression of the carotid arteries after the vertebral arteries had been previously ligated at the level of the first rib, usually caused the dog to faint and produced changes in the pattern of the E.E.G. comparable to those seen after electrocution.

He concluded that the unconsciousness which preceded death caused by electrocution was due to cerebral anoxia following stoppage of the heart. There were no grounds for supposing that the shock itself produces directly any loss of consciousness in the animal. These conclusions were assumed to apply to cats as well as dogs.

BRAUDE, R., CLARKE, P. M. & MITCHELL, K. G. (1954). **Analysis of the breeding records of a herd of pigs.**—*J. agric. Sci.* **45,** 19-27. [Authors' summary slightly modified.] **1208**

An account of a survey and statistical analysis of the records of litters born in a herd of Large White pigs over a period of 16 years. The mean length of gestation was 114 days for both gilts and sows. The mean numbers of pigs born alive and born dead per litter from gilts, 10 and 0·2 respectively, were both significantly smaller than the corresponding figures for sows, 11·8 and 0·8. No seasonal differences were found. The mean total losses of pigs from birth to weaning at 8 weeks were 29·5% of pigs born alive. The losses in litters from gilts, 23%, were significantly smaller than in litters from sows, 31%. The losses during the winter months both for gilts, 32·5%, and for sows, 35·9%, were significantly higher than during the summer months, 19·4% and 26·7% for gilts and sows respectively. Over 50% of the total losses were due to crushing by the dam, 74·1% of the losses from this cause occurring during the first 48 hours after birth.

The mean number of pigs weaned per litter was 8. The differences between the number weaned per litter from gilts, 7·7, and from sows, 8·1, was not significant. A significantly larger number of pigs was weaned per litter from sows during the summer months, 8·7, than during the winter months, 7·4. There was no significant difference between the number of male and of female pigs weaned. The mean weight at weaning was 29·9 lb., male pigs (30·3 lb.) being significantly heavier than females (29·5 lb.). Pigs in litters from gilts (27·8 lb.) were significantly lighter at weaning than those from sows (30 lb.), and for both gilts and sows, pigs reared during the summer months (29·7 and 31·8 lb. respectively) were significantly heavier than those reared during the winter months (25·9 and 28·2 lb. respectively).

The mean regression coefficient on litter order of the number of pigs born alive per litter for the first four litters was $0{\cdot}302 \pm 0{\cdot}1$ with a significant difference from zero. The regression coefficients of the number weaned and the mean weight at weaning on litter order were not significant.

TINNEY, H. R. (1954). **Some present problems of the Australian meat industry.**—*Aust. vet. J.* **30,** 271-274. **1209**

While the population of Australia had increased by 1953 by more than 27% since the war the consumption of meat had risen by only 13·8%. By 1970 it is likely that the population will have increased sufficiently to consume the equiv. of the total output in 1953. In order to meet home consumption demands with a margin to compensate for seasonal shortages, meat production must rise to 1,250,000 tons for 1954 and 1,450,000 tons for 1970. In addition demands for the United Kingdom are likely to increase and there are small markets in approx. 50 other countries. T. discussed the role which the veterinarian can play in increasing meat production, and the importance of improved breeding and feeding, together with intensified control of disease.—D. F. STEWART.

MANN, I. (1954). **High protein human food from destocking scrub animals.**—*Brit. vet. J.* **110,** 491-499. **1210**

With the aim of reducing the cattle population in overstocked areas, providing a market for cattle in poor condition unfit to travel long distances for slaughter, and at the same time to provide protein for people living in areas where livestock is scarce, an abattoir of simple construction was set up in the Samburu district of Kenya. Meat, hides, ruminal contents, and blood are sun-dried. Dried meat packed into sacks has been kept for 12 months without deterioration. Dried ruminal contents are incorporated into poultry food. Camels are also slaughtered at the abattoir.—R.M.

RENDEL, J. M. (1954). **The use of regressions to increase heritability.**—*Aust. J. biol. Sci.* **7,** 368-378. [Author's summary modified.] **1211**

R. discussed the difficulties of applying correction factors to eliminate non-genetic variance in selective breeding work. He examined the use of a second character as an index of environmental change and related this to the general formula for selection indices. He used tibia length and body weight in mice to demonstrate points made in the theoretical discussions of the first part of the paper.

I. HANCOCK, J. (1954). **Studies of grazing behaviour in relation to grassland management. I. Variations in grazing habits of dairy cattle.**—*J. agric. Sci.*, **44,** 420-433. **1212**

II. HANCOCK, J. (1954). **Studies in grazing behaviour of dairy cattle. II. Bloat in relation to grazing behaviour.**—*Ibid.* **45,** 80-95. **1213**

III. HANCOCK, J. & MCMEEKAN, C. P. (1954). **Studies of grazing behaviour in relation to grassland management. III. Rotational compared with continuous grazing.**—*J. agric. Sci.*, **45,** 96-103. [Authors' summaries modified.] **1214**

I. H. described a series of grazing behaviour observations on 10 sets of lactating identical twins during four fortnights distributed over the main lactation period. An outstanding feature of the grazing behaviour of dairy cattle was its variability, due to external and internal conditions. Of the external factors, climate (in a temperate zone) was relatively unimportant. The quantity and quality of the herbage offered were of importance in modifying the grazing behaviour of dairy cattle. Under adverse pasture conditions there was, in general, an increase of total working time (grazing + ruminating): grazing time increased with scarcity of herbage and with mixed quality, while ruminating time was prolonged by poor quality grass. Ruminating time was strongly dependent on the quantity and quality of the ingested grass, but the relationship was, for various reasons, obscured in a field trial such as the present.

The adaptation of grazing habits to new conditions was very rapid. Feed requirement for milk production was the most important internal factor determining variation in the length

of grazing time. Interaction between inheritance and environment as a source of variations in grazing times were due to the following factors: (a) Differences amongst sets of twins in lactational persistency, which presumably caused parallel differences in feed requirements. (b) Differences in the response of high and low producing sets of twins to varying pasture conditions. (c) Non-analysable idiosyncrasies common to the members of some sets of twins. Twins grazed and ruminated at a characteristic rate.

II. H. concluded that in general interrupted grazing with or without restricted grazing area gave no effective control of bloat, but there were definite indications that a strictly enforced system of restricting the time allowed for grazing could afford considerable control.

Long herbage proved definitely safer than herbage of the same botanical composition grazed at shorter stages of growth. It was found that cows on potentially dangerous grass grazed for short periods with only a few periods of intense activity. Thus, the opinion that bloat is caused by cows eating greedily of dangerous pastures was not substantiated. On the contrary, cows on such pasture showed marked reluctance to graze. Bloat-producing swards were also associated with reduced rumination time, even in cows showing no symptoms of bloat. The rumination time of bloated cows was generally very low.

Many of these observations were made on identical twins. From the similarity in their behaviour, he concluded that inheritance was an important factor affecting the occurrence of bloat amongst cows grazing the same herbage. In the early stages of bloat, ruminal movement and belching increased in frequency and intensity. This was contrary to the theory that bloat is due to rumen atony. Atony was observed only in the advanced stages of the trouble.

III. The authors studied the grazing behaviour of identical twin cattle on two contrasting systems of pasture management—rotation and continuous grazing. Cows on rotationally grazed pastures averaged only 11 min. per day per cow shorter feeding time and 18 min. shorter ruminating time than their continuously grazed co-twins. The total time they spent in work was thus 29 min. shorter. While the average differences in total work over the whole trial were not great, the continuously grazed cows worked for appreciably longer daily periods at the time of seasonal feed shortage during which time the cows on rotationally grazed pasture were protected by their pasture diet being supplemented with silage.

The differences in grazing behaviour between the cows of the two treatments, together with the magnitude of the seasonal variations which occurred in both groups, indicated that dairy cows attempt to maintain a stable production in the face of adverse pasture conditions by increasing their feeding time. Previous conclusions based on observations of uniformly treated twins regarding the importance of heredity in the determination of grazing behaviour were fully confirmed.

See also abst. **1234** (book, restraint of animals).

TECHNIQUE AND APPARATUS

GREIFF, D. & PINKERTON, H. (1954). **The effects on biological materials of freezing and drying by vacuum sublimation. I. Development and testing of apparatus.**—*J. exp. Med.* **100,** 81-88. [Authors' summary modified.] **1215**

The authors described a vacuum sublimation apparatus which permitted (a) the removal of water from virus suspensions at temp. ranging down to −80°C., (b) continuous operation with a minimum attention from the investigator, (c) sealing off of samples at pressures of 10^{-5} mm. Hg, (d) simultaneous lyophilization of samples at different temperatures, (e) isolation of a portion of the apparatus without disturbing the remainder of the system, and (f) determination of the end-point of sublimation without disturbing the samples.

The time required for drying 0·1 ml. of influenza virus suspension increased markedly with decrease of temp., 8 days being required for dehydration at −80°C. in contrast to 2 days at −30°C. and one day at 0°C.

DELORME, E. J. (1953). **A quantitative method for measuring red cell content of tissues *in vivo*.**—*Quart. J. exp. Physiol.* **38,** 47-54. **1216**

Blood from a dog was mixed with radioactive phosphorus in the form of buffered orthophosphoric acid. It was then re-injected i/v, and 20 min. later the radio-activity of the spleen, liver, kidneys, intestines and muscles was measured separately by means of a Geiger counter introduced through a laparotomy incision. The r.b.c. content of a given tissue was calculated by comparing its radio-activity with

that of the blood. Results obtained by this method from 12 dogs were more accurate than those obtained by excision of tissue or by estimation of its haemoglobin or radio-active iron content. D. also studied the effects of bleeding, followed by re-infusion, in dogs, and the effects of contralateral stimulation of the cerebral cortex of a monkey, on the r.b.c. content of tissues.—R.M.

DRURY, F. S., DYCE, K. M. & MERLEN, R. H. A. (1954). **Some practical aspects of the experimental radiography of the larger domestic animals.** — *Vet. Rec.* **66,** 593-595. **1217**

The authors discussed the difficulties of radiographing the trunk of large animals and made suggestions as to how sufficient kilovoltage and current may be obtained, scatter reduced, and movement eliminated. They included reproductions of seven radiographs of the thorax, abdomen or limbs of 6 ponies and an elephant, with technical notes.

—M. B. HAWKSLEY.

See also absts. **906** (media for isolation of S. pullorum from eggs and egg powder); **912** (identification of salmonella with a specific bacteriophage); **979** (contrast strain for demonstration of Negri bodies); **1045** (virus cultivation in mouse embryo brain tissue); **1121** (bilirubin tests); **1165** (isolation of copper protein from horse liver); **1206** (electrical stunning apparatus).

MISCELLANEOUS

MATTHEWS, L. HARRISON. (1954). **Research on the mammals of Africa.**—*Nature, Lond.* **174,** 670-671. **1218**

M. stated that very little serious work has been done on the natural history of game animals. A close understanding of individual life histories is essential to the proper control of game reserves.—A.S.

TOMLINSON, A. R., GOODING, C. D. & HARRISON, L. A. (1954). **The wallaby menace in the Kimberleys. Control experiments, June-Oct. 1953.**—*J. Dep. Agric. W. Aust.* **3,** 609-617. **1219**

Research into methods to control the Sandy Wallaby (*Macropus agilis*), a pest to the pastoral industry in the Kimberley district of Western Australia, has been carried out since 1952. The authors gave an account of poisoning experiments in which a machine was used to make bran and pollard bait. Studies were made of the optimum size of the bait pellets, the optimum proportions of water, bran and pollard, and of the most suitable form of strychnine to use. They gave details of poisoning experiments and of costs.—R. I. SOMMERVILLE.

REPORTS

GREAT BRITAIN. (1953). **Report of the Medical Research Council for the year 1951-1952.** pp. 251. London: H.M. Stat. Off. 6s. 6d. **1220**

Developments resulting from the application of partition chromatography to the isolation of such substances as vitamin B_{12} are reviewed. Steroid hormones occurring in the adrenal glands and peptid hormones of the pituitary gland have been purified by this means. The method has been applied to a study of the formation of milk fats and has been invaluable in analysing the complex fatty acid mixtures obtained in these experiments. A new thyroid hormone, triidothyronine, and also the toxin produced from flour bleached with nitrogen trichloride (agene) has also been isolated by this technique.

It is now well established that the activity of most glands of internal secretion may be affected by nervous processes. The effect of emotional excitement on the secretory activity of the posterior pituitary gland under the influence of pain or a disturbing noise will release the anti-diuretic hormone which suppresses the flow of urine. There is also a close relationship between the c.n.s. and the posterior pituitary gland during lactation. The act of suckling excites a nervous reflex in the mother which results in posterior pituitary secretion and the hormone liberated is carried in the blood stream to the mammary glands to cause ejection of milk. In more recent experiments with purified extracts of the posterior pituitary gland it was found that the extract containing oxytocic hormone was the most potent in stimulating milk flow and this is the hormone evoked by the act of suckling which stimulates the uterine muscles and causes conraction of the uterus. The posterior pituitary gland receives a rich nerve supply from the hypothalmus and is influenced by emotional factors; but the anterior

pituitary gland, ovary, testis, thyroid and adrenal cortex, which receive very few, if any, nerve fibres, are also influenced by emotional factors. Investigation has shown that electrical stimulation of the hypothalmus, but not of the anterior pituitary gland, causes secretion from the anterior pituitary gland of hormones controlling activity of sex and adrenal glands. The anatomical path by which the hypothalmus excites the ant. pituitary gland was shown to be through the blood vessels. There are indications that adrenaline or a similar substance is concerned in the regulation of ant. pituitary activity. Damage to various parts of the hypothalmus or the blood vessels of the ant. pituitary gland stalk prevents the normal secretion of A.C.T.H. by the ant. pituitary gland when the animal is emotionally excited.

Many problems relating to BACTERIAL FOOD POISONING remain to be solved. The nature of the toxic substances produced by different food-poisoning organisms has still to be worked out. The tissues on which toxins act and the means by which they produce their effects are also unknown. The solution of these problems may well demand united efforts by bacteriologist, physiologist, pharmacologist and biochemist.

In spite of the vast amount of information on the extent of bacterial resistance to various antibiotics, very little is known about the underlying basis of the process. More fundamental knowledge of bacterial metabolism is necessary.

The most promising line of treatment for HAEMOPHILIA is the administration of the missing antihaemophilic globulin. It is hoped to obtain a preparation of this so active that small amounts at regular intervals will reduce the tendency to bleed unduly.

There are sections also on the physiology of the red blood cell and the metabolism of porphyrins and a list of the publications by members of the Council's staff and others carrying out research with monetary aid from the Council.—J. A. GRIFFITHS.

INDIA. (1951). **Proceedings of the eighth meeting of the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India, Mysore. 17th to 22nd February 1949.** pp. xii+260. Simla: Govt. of India Press. Rs. 11/14/- or 18s. 6d. **1221**

This biennial meeting approved the resolutions of its constituent committees, as follows.

The Animal Health Committee recommended:—thorough investigations of diseases of sheep and goats; control of calf mortality by introducing improved methods of husbandry and feeding, suitable treatment and control of helminth infestations, and investigation of causes of deaths among calves; setting up of a central organisation for administering standards for veterinary vaccines and sera; control of BRUCELLOSIS by general hygiene, elimination of reactors, and vaccination in herds having an infection rate above 5%; search for more efficacious drugs for curing NASAL SCHISTOSOMIASIS in cattle, study of its epidemiology, and development of simple and more effective preventive measures; full utilization of the available means of publicity for popularizing approved animal husbandry practices among cattle owners, especially by visual educational methods; collection of appropriate pathological material from sheep killed *in extremis* for diagnosis of anaerobic infections; eradication of TB., without vaccination, and establishment of camps for housing reactors (slaughter being impracticable on religious grounds); and research for improving the keeping quality of NEWCASTLE DISEASE vaccine.

The Livestock Committee recommended:—various measures to help nomadic breeders to play a greater part in the improvement of cattle; the setting up of a special committee to examine the problem of improving cattle in hilly areas; systematic survey of trace element contents of fodder and soil in various parts of India, and the setting up of regional laboratories for the purpose; the opening of artificial insemination centres in suitable areas, the selection of proven sires by progeny testing and the observance of due caution in extending the artificial insemination service; and establishment of 'key villages' in different States for intensive cattle breeding by utilizing to the best advantage the pure-bred bulls available, enforcement of the Livestock Improvement Act for castrating all scrub cattle in 'key village areas', and subsequent extension of these areas by using the progeny so improved.

The Dairying Committee recommended:—removal of milch cattle from urban areas to rural suburbs; suitable concessions in land revenue, etc., and various other measures for augmenting fodder production, prohibition of export of edible oil-seeds and their use for manure or for extraction of oil; and preservation of such good breeds of milch cattle had become scarce owing to partition of the country.

The Ad Hoc Education Committee recommended:—the setting up of a Veterinary Education Council for ensuring high quality and uniformity of educational standards in different States; and the provision of suitable post-graduate courses.—R. N. MOHAN.

INDIA. (1952). **Annual report of the Animal Husbandry Department, Uttar Pradesh, for the year 1949-50.** [KAURA, R. L.] pp. 115. Allahabad: Superintendent Printing and Stationery. Rs. 2-4. **1222**

A combined report of the Animal Husbandry Department, Mechanised State Farms, Veterinary College, and Livestock Research Station.

Deaths due to contagious diseases showed marked reduction and were:— RINDERPEST 5,295; HAEMORRHAGIC SEPTICAEMIA 4,741; FOOT AND MOUTH DISEASE 1,219; BLACKLEG 693; ANTHRAX 582; and SURRA 339. Only one case of GLANDERS was detected. The Biological Products Section prepared 777,200 doses of RINDERPEST vaccine and 1,315,900 doses of HAEMORRHAGIC SEPTICAEMIA vaccine. A total of 896,260 animals received treatment at the 212 State Veterinary hospitals.

The cattle development policy consisted of selective breeding among the distinctly defined local breeds and upgrading of nondescript stock with improved Indian breeds, chiefly Hariana cattle and Murrah buffaloes. A total of 5,537 bulls, including 1,024 buffalo bulls, were in use all over the State. At the 6 artificial insemination centres, 861 cows and 777 buffaloes were inseminated; the conception percentage was 71·2 in cows and 67·5 in buffaloes. Scrub bulls castrated were 243,590. Five stud ram centres were in operation for upgrading the sheep. Four Angora bucks were imported from the U.S.A. for the improvement of mohair in hill goats.

The College entered its third year and saw completion of the hospital block. The activities of the research staff were directed mainly towards the establishment of artificial insemination centres and improvements in insemination technique; detection and treatment of STERILITY; increase of milk yield by iodinated casein; search for a perennial leguminous fodder and a suitable orchard grass; comparison of the feeding values of wheat straw and rice straw; large-scale field trials of the thick agar-wash HAEMORRHAGIC SEPTICAEMIA vaccine; control of FASCIOLIASIS; MASTITIS in cows and goats; VITAMIN A DEFICIENCY in calves and chickens; and miscellaneous helminth infestations.

—R. N. MOHAN.

INDIA. (1953). **Annual report of the Indian Council of Agricultural Research for 1950-51.** pp. 170. Sadar Thana, Delhi: Swan Press of Lahore. **1223**

The report recorded the progress made and the results achieved in the various animal husbandry research schemes financed by the Council. The average 'reaction time' in Hariana bulls was 24 min. 29 sec., and the average calving interval in cows was $500{\cdot}64 \pm 11{\cdot}52$ days. In pregnant heifers massaging of the udder was generally followed by higher milk yield and longer lactation period. Cows were used for draught purposes without untoward effects on lactation or reproduction. The good effects on cattle improvement of insurance and better marketing facilities were well demonstrated. The first two units under the Key Village Scheme went into operation. In this scheme it is proposed to upgrade inferior local cattle with bulls of better breeds like Hariana and to utilize artificial insemination as much as possible.

The incidence of tuberculin reactors in Kashmir was higher (10·5%) in stall-fed cattle than in village cattle (4·5%). Vaccination of cattle against BRUCELLOSIS "gave encouraging results". FOOT AND MOUTH DISEASE caused 15 to 53% reduction in milk yield, and the virus was present in the milk 24–72 hours before clin. symptoms appeared. Many cases of URINARY LITHIASIS were encountered in bullocks.

Good results were obtained with neoarsphenamine ("N.A.B.") in the treatment of CAPRINE CONTAGIOUS PLEURO - PNEUMONIA. SHEEP POX was widespread in Bombay. GOAT POX virus was successfully transmitted to sheep. RICKETTSIASIS was encountered in a Merino ram.

SALMONELLOSIS was reported in chicks and ducks in Bombay and West Bengal. "Sulfarsenol" (sulpharsphenamine) gave better results than "soamin" (the mono-sodium salt of *p*-amino-phenyl-arsonic acid) in the treatment of FOWL SPIROCHAETOSIS. TRICHOMONIASIS occurred in poultry and pigeons in West Bengal and Hyderabad, with 80% mortality in two outbreaks. Vaccination of chicks below 6 months of age against FOWL POX did not confer satisfactory immunity. Chickens above 14 weeks of age were found to resist infestation with *Ascaridia galli* and *Heterakis gallinae*. The AVIAN LEUCOSIS COMPLEX and CONTAGIOUS CORYZA occurred in several poultry farms in Mysore.—R. N. MOHAN.

NORTHERN RHODESIA. (1954). **Department of Veterinary Services. Annual Report for the year 1953.** [HOBDAY, J.] pp. 22. Lusaka: Govt. Printer. 1s. **1224**

The general aim of the Department is an over-all interest in livestock. The veterinary

staff was augmented by three, but there was also one resignation.

Of the diseases which occurred, the following are especially mentioned:—NEWCASTLE DISEASE, SWINE FEVER, RABIES, TRYPANOSOMIASIS and FOOT AND MOUTH DISEASE. There had been freedom from F. & M. DISEASE since the severe outbreak in 1950 until this outbreak in July 1953. "LUMPY SKIN DISEASE" in cattle and POSTERIOR PARALYSIS affecting horses and sometimes cattle—believed to be caused in horses by *Nuttallia equi* and curable when promptly treated by the i/v inj. of euflavine ("gonacrine")—were also reported.

The compulsory vaccination of dogs against RABIES was brought into effect in the large urban areas and was welcomed by the great majority of European owners.

In the laboratory 1,778 smears and 567 other specimens were examined. Of the total cattle population, 129,196 were owned by Europeans and 842,658 by Africans.

—D. S. RABAGLIATI.

U.S.A. (1951). **Report of the Administrator of Agricultural Research 1951.** [CARDON, P. V.] pp. 497. Washington: U.S. Govt. Printing Off. $1.00. **1225**

Research on FOOT AND MOUTH DISEASE was conducted in several countries. Samples of the virus from the outbreak in Mexico in 1950 were identified in tests carried out in England and Mexico as Type A. Antiserum of O, A, and C types from the Foot and Mouth Disease Research Institute, England were used to identify the current strains of the virus in Mexico. In trials of various vaccines it was found that immunity declined three months after vaccination, but that a substantial resistance persisted in some animals for six months. Vaccines used contained 0·8% to 4% virus to 50% aluminium hydroxide. The tests were made with more than 200 cattle which were exposed to artificial inoculation from 2 weeks to 6 months after vaccination.

At Beltsville investigations indicated that resistance to BRUCELLOSIS as a result of a 5 ml. s/c injection of *Br. abortus* Strain 19 vaccine did not decrease with an increase of age of the animals. The degree of protection varied considerably between different age groups and between individuals of each group. In 83 vaccinated animals artificially exposed to highly virulent strains resistance was greatest during the 4th and 5th pregnancies and least in the first pregnancy. Only 34 of the 83 vaccinated animals became infected as compared with 48 of 50 controls: 56 of the vaccinated animals produced full term calves but only 5 of the controls calved at full term. In first calf heifers 2 out of 10 vaccinated and 5 out of 9 controls became infected on exposure; only 2 abortions occurred in each group. Subsequent experiments indicated that the artificial exposure in the above experiment had been excessive.

At Wisconsin 479 cows were revaccinated with Strain 19. The Strain 19 organisms could not be isolated from their milk one week after vaccination or at subsequent calvings. Less than 10% were reactors one year later, abortions dropped from 7% to 3% and the infection had been eradicated after three years. The relative importance of revaccination and improved sanitation in obtaining these results was difficult to evaluate.

MASTITIS due to *Cryptococcus neoformans* caused severe losses in a dairy herd of 200 cows. No satisfactory treatment was found.

A simpler complement-fixation test for ANAPLASMOSIS was evolved. Difficulties occurred in preparing uniform batches of antigen. Recent work showed that although *Bartonella* infected calves are not usually suitable for antigen production, a good antigen was prepared for a calf infected with this organism.

Only 1,023 cases of EQUINE INFECTIOUS ENCEPHALOMYELITIS occurred in 33 States. About 89,000 animals were vaccinated. Two carriers of EQUINE INFECTIOUS ANAEMIA infected in 1935 were capable of setting up the infection in susceptible horses in 1950. The blood of two former carriers that were resistant to repeated exposures to the virus was found to be non-infective and without any immunizing value. The addition of phenol 0·5% to virulent blood serum was effective in killing the virus when the serum was held for 92 days at 5°C. Untreated serum kept at 5°C. for 94 days was still virulent. Attempts to propagate the virus on the yolk sac of chick embryos failed.

In a study of SWINE BRUCELLOSIS 165 young pigs, negative to the agglutination test and to blood culture during the 8 weeks' nursing period and at later intervals, did not become infected as a result of being suckled by brucella infected sows for 8 weeks. In an experiment in which streptomycin 2 g. daily with 1½ grains of sulphadiazine per lb. body wt. was given daily to two groups of artificially infected pigs and one group naturally infected, the treated animals lost or barely maintained weight and one in each group showed extreme toxic symptoms. Controls gained weight. The treatment frees the blood from organisms but they can be recovered from the carcasses.

Experiments on SWINE ERYSIPELAS indicated that pigs become infected through minor cuts or bruises of the skin. The plate agglutination test is useful as a herd test.

NEWCASTLE DISEASE of Asiatic origin introduced by air transport from China to California proved very virulent.

FOWL CHOLERA (*Pasteurella septica*) can be maintained in its original state of virulence for chickens in lyophilized cultures. Natural infection takes place through wounds and mortality rates vary with the site of the wound.

Toxoplasma gondii in chinchillas caused a severe outbreak of disease. Symptoms were anaemia and emaciation, dyspnoea, nasal discharge, vomiting, haemorrhagic diarrhoea and abdominal pain. In studies of the role of diet in STEATIS (YELLOW FAT DISEASE) in mink a diet containing 85% fresh fish scrap caused the formation of the yellow pigment in the fat. Adding vitamin E to the diet prevented the formation of this pigment.

Experimental SALMON DISEASE in dogs was successfully treated with sulphonamides, penicillin, aureomycin and chloramphenicol.

There were only nine cases of RABIES in human beings, but 7,910 cases in domestic animals.

Halogeton glomeratus, a close relative of the Russian thistle, is the most dangerous poisonous plant on Western ranges. Feeding small amounts of alfalfa immediately after the ingestion of this plant reduces the toxicity by one-third. Herbicidal sprays have no appreciable effect on the toxicity of larkspur (*Delphinium barbeyi*) when fed to sheep.

Lindane, the γ-isomer of benzene hexachloride in 0·05% emulsion caused poisoning in week-old calves. Toxaphene in 2% emulsion was poisonous to calves 3 to 4 months of age and caused one death among 9 Jersey calves.

Development of coccidia in calves is influenced by organisms in the rumen acting possibly by releasing the parasites from their cysts.

Portable pens were found to be superior for raising dairy calves as compared with the usual indoor method. Calves remained more free from helminths, coccidia and other infections.

Some evidence was obtained of the transmission of PSOROPTIC MANGE from sheep to a cow. Herds infected with SARCOPTIC and/or CHORIOPTIC MANGE were successfully treated by spraying under pressure with a 0·075% soln. of lindane twice at intervals of 12–14 days or by a single treatment with a 0·012% soln.

Infestations of the liver by the tapeworm *Stilesia globipunctata* are acquired by sheep and goats during late summer and the autumn. The eggs are resistant to drying and temperatures as low as 20° to 22°C. The intermediate host has not been identified. *Moniezia expansa* appears to be harmless to infected sheep and goats and can be eliminated by the metallic arsenates of Ca, Cb, Cu, in a dose of 0·5 g. in a gelatin capsule. Arsenate of iron in an impure form in doses of 1 to 2 g. cleared the animals treated of all the common stomach worms as well as the tapeworms. Toxaphene is effective against sheep keds when used in sprays or dips in an aqueous concentration of 0·25%.

In an experimental infestation of pigs it was shown that *Hyostrongylus rubidus* can cause internal haemorrhage and in heavy infestations other damage. Faeces of infected rats transmit trichinae to pigs. In a survey the incidence of *Trichinella* infestation in farm-raised pigs was found to be 1% whereas 9% of swill-fed pigs were infested.

The crop worm, *Capillaria contorta* was a cause of heavy losses in turkeys. Losses among wild geese in Canada were mainly due to parasitic infestations.

In limited trials bis- (5-chloro-2-hydroxyphenyl) sulphone was effective in the treatment of *Taenia taeniaeformis* in cats and related species in dogs. Toluene was effective against hookworms and large roundworms in dogs.

—J. A. GRIFFITHS.

U.S.A. (1953). **Report of the Administrator of Agricultural Research 1952.** [SHAW, B. T.] pp. 484. Washington: U.S. Govt. Printing Off. $1.00. **1226**

During 1952 three diseases threatened the U.S.A.—FOOT AND MOUTH DISEASE, VESICULAR EXANTHEMA in pigs, and AIR-SAC INFECTION in poultry.

F. & M. DISEASE was diagnosed in Canada in February 1952, but fortunately owing to the precautions taken there and in the U.S.A. it did not spread beyond the Canada-U.S. border. Mexico was declared free from infection on the 12th March 1952.

VESICULAR EXANTHEMA in pigs first became a national problem in 1952 for although it had been present in California since 1932 no cases had been reported outside that State. The outbreaks have occurred among swill-fed pigs in 16 States.

AIR-SAC INFECTION in poultry is a chronic respiratory disease in which there is inflammation of the air-sac membranes. Birds that survive may recover in about 3 weeks or may continue to show symptoms indefinitely. The disease has spread to every poultry-producing

region of the U.S.A. Mortality rates are from 30% to 50%.

ANTHRAX occurred on about 400 farms in five States. Pigs were mainly infected and swill-feeding played an important part, but in some States imported raw bone meal was infected and had been distributed in food supplements.

Vibrio fetus is an important cause of STERILITY.

Field tests of tuberculin fractions revealed that natural sensitization to acid-fast organisms is different from artificial sensitization. In most cases reactions to tuberculin fractions in Johne's disease infected cattle were as great or greater than reactions to regular tuberculin, whereas the reverse was true in animals artificially sensitized by heat-killed mycobacteria.

The incidence of EQUINE ENCEPHALOMYELITIS has declined. In 1951 there were 762 infected and 274 deaths, the lowest recorded in any year. A horse was infected with EQUINE INFECTIOUS ANAEMIA in 1935 and its blood was still virulent in 1952. In studies on the efficacy of lyophilization for maintaining the virus, different strains in blood serum, filtered and lyophilized, were fully virulent 16 months to 6 years and 10 months later.

The experiments on SWINE BRUCELLOSIS described in the 1951 report were repeated. A higher proportion of unweaned pigs became infected when suckled by sows with acute brucellosis than by sows with chronic brucellosis.

Hyperimmune serum from pigs immunized with variant SWINE FEVER virus or with crystal violet vaccine made from variant virus had low antibody titre and did not protect against simultaneously administered variant virus.

An antigen for detecting FOWL CHOLERA carriers by the rapid whole blood agglutination test was studied. NEWCASTLE DISEASE and AIR-SAC INFECTION were also studied. A technique was developed for the use of egg-adapted DISTEMPER virus in fur animals. No ferret vaccinated two or more days before challenge with virulent distemper virus developed symptoms of distemper.

Blood tests for BRUCELLOSIS on 7,491,327 cattle revealed about 4·2% reactors; 3,179,251 calves were vaccinated. Brucella ring tests on over 8·5 million cattle in 454,732 herds revealed that 135,967 herds were infected. In the Co-operative TB. eradication work during 1952 tuberculin testing of 9,164,265 cattle showed 0·11% infected. Tests for JOHNE'S DISEASE on 2,849 cattle in 12 States showed that 5·9% were infected.—J. A. GRIFFITHS.

BOOK REVIEWS

SMITH, G. [Lecturer, Department of Biochemistry, London School of Hygiene and Tropical Medicine.] (1954). **An introduction to industrial mycology.** pp. xiv+378. London: Edward Arnold (Publishers) Ltd. 4th Edit. 30s. **1227**

The title of this deservedly popular manual is liable to mislead for the book is not, as might be supposed, an introduction to alcoholic fermentation, antibiotic production, and other industrial processes involving the use of fungi (topics briefly dismissed in a single chapter) but a series of illustrated descriptions of a large number of moulds and yeasts supplemented by details of the commoner mycological laboratory techniques and an appendix on microscopy. Most of the fungi described have been selected for their industrial interest. Many, however, are common and ubiquitous saprophytes, a number are characteristic of the environment of farm animals, and a few are pathogenic or potentially pathogenic for animals and man.

The book is 'intended to assist those who are commencing the study of "moulds" . . .' No previous knowledge of mycology is assumed and the essentials of the subject are logically and clearly developed. Any veterinary worker interested in fungi should find this book a useful supplement to the *Manual of clinical mycology* by Conant *et al.* [*V.B.* **25**, 554].

—G. C. AINSWORTH.

WRIGHT, G. PAYLING. [Professor of Pathology, Guy's Hospital Medical School, University of London.] (1954). **An introduction to pathology.** pp. xii+636. London (New York & Toronto): Longmans Green & Co. 2nd Edit. 40s. **1228**

This excellent book is a lucid exposition of the basic features of pathology, the "science concerned with abnormal states of the body, the functional disorders that accompany them, and the causes that bring them about". The author, who has great experience of research, and is evidently very widely read, wears his learning lightly, and gives an extremely interesting descriptive and explanatory account of the subject matter—infection and the body's

reaction to it, degenerations of tissue, repair processes, circulatory disturbances, neoplasia, and so on—giving due consideration to both morbid morphology and morbid physiology, and discussing fully relevant findings in experimental pathology.

Particular emphasis is placed on the aetiology and development of pathological processes, for "it is only after the causes of an abnormality or disease are known that suitable steps can be taken to prevent their effective operation, and prevention of disease is the goal of modern medicine".

The book is well-illustrated, and a number of charts and diagrams aid explanation. For the inquiring student, a number of references to relevant literature are given. This second edition contains two new chapters—on inflammation in allergic reactions, and on tissue reactions to ionizing radiations.

Although intended mainly for the medical student entering the clinical period of his training, the author has written the book also to meet the needs of the postgraduate student. The book will be found of great value by the veterinary student reading for his examination in general pathology, and it is also recommended to the qualified veterinary surgeon, who may perhaps be pleasantly surprised to find that pathology is a subject of absorbing interest, as well as being of fundamental importance to clinical studies.—E. COTCHIN.

—. (1954). **Progess in the physiology of farm animals. Vol. I.** [Edited by: HAMMOND, J.] pp. vii + 392 + xv. London: Butterworths Scientific Publications. 45s. **1229**

This book is the first of three volumes dealing with animal physiology from the point of view of animal production. There is no doubt, as the Editor notes in the preface, that the science of physiology should form the basis of animal husbandry and that the application of the knowledge now available concerning the physiology of farm animals can increase their efficiency as producers of meat, milk, wool, eggs, etc. A textbook dealing with the applied physiology of farm animals can therefore serve a useful purpose and cover a field not usually dealt with in textbooks of physiology intended for medical or veterinary students, but it must be clearly kept in mind that fundamentally there is only one physiology and that if it is to serve any useful purpose, any branch of so-called applied physiology must be firmly based on facts established as a result of advances in the pure science of physiology. It is only thus that the desired control over the functioning of the animal body can be obtained.

This volume is divided into two main sections, dealing respectively with nutrition and metabolism and with environment. In the first section ruminant, pig, and poultry nutrition and trace elements are dealt with and in the second section the ecology of domestic animals, environmental physiology of farm animals, heat regulation in birds and daylight changes are considered each by separate authors. It is difficult to assess the significance of the subjects chosen for this first volume without having knowledge of the proposed contents of the remaining two volumes, but superficially, at any rate, the presentation appears somewhat disjointed, each author's contribution being in the nature of a review article dealing with rather limited aspects of the subject under discussion. Moreover, there is a certain amount of overlapping; for example the section on trace elements repeats much of what has been already discussed in the section on pig and poultry nutrition. Nevertheless, much useful information, particularly with regard to the effects of environment on animals and heat regulation in birds will be found in this book, which is one that will repay study by all those interested in the physiology of farm animals.

—J. A. NICHOLSON.

LISON, L. [Professeur à l'Université de São-Paulo (Brésil), Faculté de Médecine de Ribeirão Preto.] (1953). Histochimie et cytochimie animales. Principes et méthodes. **[Principles and methods of animal histochemistry and cytochemistry.]** pp. vi + 607. Paris: Gauthier-Villars. 2nd Edit. Fr. 3800. **1230**

This volume is divided into three main sections, the fundamental principles of histochemical research, general methods of *in situ* histochemical investigation, and special analytical methods.

The first section begins with a brief introductory consideration of histochemical methods, the most useful part of this chapter being reproduction of Baker's classification of these methods. This is followed by morphological and fixation problems, preparatory techniques, and chemical conditions governing colorimetric reactions.

The second section deals with optical methods, microcombustion, staining methods, autoradiographic methods, and quantitative techniques.

The third and major part deals exhaustively with the techniques for demonstrating specific elements and biochemical factors. Included are

methods for alkalies, acids, inorganic elements, proteins, nucleic acids and derivatives, carbohydrates, fats, metabolic products, pigments, enzymes, and vitamins.

The result is a useful reference book on histochemical techniques, but two annoying features are the scarcity of good diagrams and figures where they might frequently have been of value, and the placing of chapter bibliographies at the back of the book instead of at the end of the appropriate chapter.

—D. S. PAPWORTH.

—. (1954). **Shock and circulatory homeostasis. Transactions of the Third Conference, September 14, 15, 16, 1953, Princeton, N.J.** [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: GREEN, H. D.] pp. 230. New York: Josiah Macy, Jr. Foundation. $3.50. **1231**

This book is a report of the Third Conference on Shock and Circulatory Homeostasis held at Princeton in 1953. The three main papers delivered, together with the respective group discussions are presented, with the aid of figures and diagrams where appropriate. The titles were:—Experiences with shock in the Korean theatre [of war], Reflex factors in the regulation of the circulation, and Functional properties of blood vessels.

Most of this volume presents the rapier thrusts of discussion, and although a stimulating book to the physiologist with some of the questions posed and hypotheses sketched, one cannot help feeling that a longer presentation by the author of each paper, followed by a more carefully edited discussion, would have further improved a book of high merit.

—D. S. PAPWORTH.

ANON. (1954). **British Pharmaceutical Codex 1954.** pp. xxxii + 1340. London: The Pharmaceutical Press. 63s. **1232**

The last edition of the British Pharmaceutical Codex was published in 1949, and a supplement to it was published in 1952. In the 1954 edition the following additions have been made: 69 drugs, 7 vaccines (including rabies vaccine), and 64 formulations. The following have been deleted: 258 drugs, 7 vaccines, and 372 formulations. Most of these have been omitted as being out of date, but a few, such as derris, cantharidin, fenugreek, and red mercuric iodide, have been deleted because they are now incorporated in the British Veterinary Codex. The general layout is the same as that of the 1949 edition, but the official names are now in English instead of Latin.—R.M.

THOMAS, E. W. C. (1954). **A synopsis of forensic medicine and toxicology.** pp. viii + 180. Bristol: John Wright & Sons, Ltd. 3rd Edit. 12s. 6d. **1233**

In composition this book is in the style of the "Aids" series so familiar to the harassed student, who has missed most of the term's lectures, and suddenly awakes to find an examination confronting him. Written by a Medical Officer of Health who is also a qualified barrister, the result is a concise presentation, with good balance as between the clinical and legal aspects of each problem. A good reference book for the medical practitioner, or the veterinary surgeon on certain general forensic matters and the poisons regulations.

—D. S. PAPWORTH.

LEAHY, J. R. & BARROW, P. (1953). **Restraint of animals.** pp. xv + 269. Ithaca, N.Y.: Cornell Campus Store, Inc. 2nd Edit. $3.75. **1234**

The authors of this useful book state that they have taken advantage of constructive criticism of their original edition [*V.B.* **22**, 1939] and this new one is correspondingly improved and more comprehensive, by the incorporation of a chapter on the restraint of laboratory animals.

Figures and text between them give concise and sound advice which should enable anyone to control domestic animals.

—J. EDWARDS.

—. (1954). **Control of rats and mice. Vols. I & II. Rats. Vol. III. House mice.** [Vols. I & III Edited by: CHITTY, D. Vol. III Edited by: SOUTHERN, H. N.] pp. xxxi + 305, xiii + 532 & x + 225. Oxford: Clarendon Press; (London: Geoffrey Cumberlege, Oxford University Press). 105s. **1235**

The Oxford University Bureau of Animal Population carried out research on the control of rats and mice during the second world war. These three volumes cover the main results of the small group of workers engaged on this research, which not only dealt with the best methods of baiting, trapping, estimating population, and studying rat and mouse behaviour but also carried out detailed laboratory studies, and checked poisons, viruses, and gases, for their effective lethal value.

The first two volumes deal exclusively with rats, main emphasis being on the brown rat. Volume one considers the properties of poisons, types of baiting containers, methods of measuring rat populations, and the response to baits used in control.

The second volume discusses the reaction of the brown rat towards environmental changes, the amount of wheat consumed by the brown rat, the consumption of plain and poisoned cereal baits by this animal, and analysis of the stomach contents of brown rats poisoned in the field. The book concludes with chapters on the behaviour of white rats, rural rat control, the control of rats in ships and of sewer rats.

The third volume is devoted to the house mouse, and commences with reports on its environment and feeding habits. The remainder of the book deals with the various poisons that can be used to control mice, and the best ways of handling poisons for effective eradication. A final chapter considers the use of carbon dioxide for fumigation of house mice.

These volumes are directed towards the research worker and serious student of animal behaviour and do not provide a reference work for the rodent officer or individual desiring to remove rats or mice from infested premises. As an outcome of this excellent work much folklore concerning rats and mice was found to be false or to require modification. Despite the heterogeneous nature of the research projects the volumes are well edited and presented. The literature is only covered up to the end of 1947, however, and despite the explanation in the preface, the result is that the work is seven years behind the date of publication.

—D. S. Papworth.

Silbersiepe, E. [Direktor der Chir. Tierklinik der Freien Universität Berlin-Dahlem.] & Berge, E. [Direktor der Chir. Veterinärklinik der Justus Liebig-Hochschule, Giessen.] (1954). Lehrbuch der Speziellen Chirurgie für Tierärzte und Studierende. **[Textbook of special veterinary surgery.]** pp. xvi + 595. Stuttgart: Ferdinand Enke. 12th enlarged edit DM 58. **1236**

This twelfth edition replaces the eleventh edition of 1950. Considerable revision and additional matter have been worked into the new edition, in particular in the theme of specific anti-infective treatment and numerous new photographs and figures illustrating the surgical diseases of domestic animals have been added.

The book thus retains its leading place in the instruction of German veterinary students and surgeons. Although the horse retains a prominent position in the book, the other large and small farm animals are not neglected. The arrangement of the text is orderly and it is easy to find information about any topic of interest even without the aid of the extensive index. The book can be highly recommended and could be of much instructional value to readers with little knowledge of the German language.

—J. Edwards.

Tillmann, H. [Professor der Tiergeburtshilfe und -gynäkologie, der Freien Universität Berlin.] (1954). Der Kaiserschnitt bei Schwein und Wiederkäuer. **[Caesarian section in pigs and ruminants.]** pp. 102. Berlin (& Hamburg): Paul Parey. DM 6.80. **1237**

Caesarian section is gradually being carried out more and more in general veterinary practice and to meet the need for instruction in this matter the author has written his book which in a hundred pages deals with the subject matter very thoroughly—rather too thoroughly, because the real practical advice required by a practitioner is to be found only after something of a search in the text, which is somewhat discursive.

All aspects of the operation are discussed, together with its possible sequels and the technique is well illustrated in some forty clear figures. Paper and printing are of good quality.

—J. Edwards.

Asratyan, E. A. (1953). **I. P. Pavlov: his life and work.** pp. 164. Moscow: Foreign Languages Publishing House; (London: Collet's Holdings Ltd.) 3s. 6d. [In English.] **1238**

This is an official biography of Pavlov, ending with a chapter on his scientific work and another in which the author expounds the Soviet "dialectical" view of biology and lays great emphasis on Pavlov's consciously materialistic approach to biology and medicine, particularly in his studies of brain function. The concept of dialectical materialism is kept well to the fore throughout the book. It is variously defined, but as used here it seems to be best described as the study of the development of nature, human society and thought, based purely on objective study, and vigorously excluding metaphysical notions.

Although written in a partisan spirit this is an interesting book, both as a biography and as an exposition of the communist view of biological research.—A.S.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

ANDREWS, G. C. (1954). **Diseases of the skin. For practitioners and students.** pp. xi+877. Philadelphia (& London): W. B. Saunders Co. 4th Edit. 91s.

BLOOM, F. (1954). **Pathology of the dog and cat. The genitourinary system, with clinical considerations.** pp .xv+463. Evanston, Ill.: American Publications, Inc. $12.50.

DREGUSS, M. N. & LOMBARD, L. S. (1954). **Experimental studies in equine infectious anemia.** pp. 203. Philadelphia, Pa.: University of Pennsylvania Press (London: Geoffrey Cumberlege, Oxford University Press). $6.50.

FRY, B. A. (1955). **The nitrogen metabolism of micro-organisms.** pp. ix+166. London: Methuen & Co. Ltd.; (New York: John Wiley & Sons, Inc.). 9s. 6d.

KÜHN, A. (1955). Grundriss der Allgemeinen Zoologie. **[Essentials of general zoology.]** pp. vii+281. Stuttgart: Georg Thieme. 11th revised edit. DM 16.50.

LERNER, I. M. (1954). **Genetic homeostasis.** pp. vii+134. Edinburgh (& London): Oliver & Boyd. 12s. 6d.

STURKIE, P. D. (1954). **Avian physiology.** pp. xii+424. Ithaca, N.Y.: Comstock Publishing Associates; (London: Baillière, Tindall & Cox). 48s.

WHITE, P. R. (1954). **The cultivation of animal and plant cells.** pp. xi+239. New York: The Ronald Press Co. $6.00.

WINTERS, L. M. (1954). **Animal breeding.** pp. ix+420. New York: John Wiley & Sons, Inc.; (London: Chapman & Hall, Ltd.). 5th Edit. $5.75. 46s.

—. (1954). **Annual review of medicine. Vol. V.** [Edited by: CUTTING, W. C. & NEWMAN, H. W.] pp. ix+490. Stanford, Calif.. Annual Reviews, Inc.; (London: H. K. Lewis & Co., Ltd.). $7.00.

—. (1954). **Radioisotope Conference 1954. Proceedings of the Second Conference, Oxford, 18-23 July. Vol. I: Medical and physiological applications.** Sponsored by the Atomic Energy Research Establishment, Harwell. [Edited by: JOHNSTON, J. E.] pp. xi+418. London: Butterworths Scientific Publications; (New York: Academic Press, Inc.). 65s.

—. (1954). **Veterinary necropsy procedures.** [Sponsored by The Armed Forces Institute of Pathology and The American Veterinary Medical Association.] [Edited by: JONES, T. C. & GLEISER, C. A.] pp. xiii+136. London: Sir Isaac Pitman & Sons, Ltd. (Philadelphia, London & Montreal: J. B. Lippincott Co.). 50s.

—. (1954). **Manson's Tropical diseases. A manual of the diseases of warm climates.** [Edited by: MANSON-BAHR, P. H.] pp. xiv +1144. London: Cassell & Co., Ltd. 14th Edit. 60s.

—. (1954). **Connective tissues. Transactions of the Fifth Conference, February 8, 9, and 10, 1954, Princeton, N.J.** [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: RAGAN, C.] pp. 222. New York: Josiah Macy, Jr. Foundation. $4.25.

—. (1954). **Adrenal cortex. Transactions of the Fifth Conference, November 4, 5, and 6, 1953, Princeton, N.J.** [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: RALLI, E. P.] pp. 187. New York: Josiah Macy, Jr. Foundation. $3.75.

—. (1954). **Advances in virus research. Vol. II.** [Edited by: SMITH, K. M. & LAUFFER, M. A.] pp. x+313. New York: Academic Press, Inc.; (London: Academic Books Ltd.). $7.00.

ANON. (1955). **The chemist's veterinary handbook, formerly Veterinary counter practice. A survey of modern methods in veterinary medicine, including diseases and treatment.** pp. 532. London: The Chemist and Druggist. 11th Edit. (re-titled). 27s. 6d.

ANON. (1953). **Medical report on atomic bomb effects. The medical section, the special committee for the investigation of the effects of the atomic bomb, the National Research Council for Japan.** pp. 118. Tokyo: Nankodo Co. Ltd. $2.50. [In English.]

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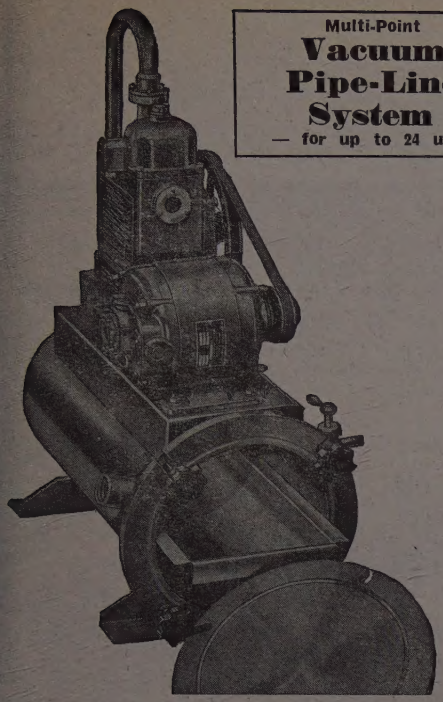

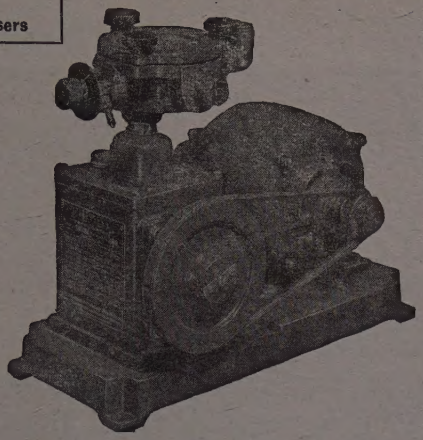

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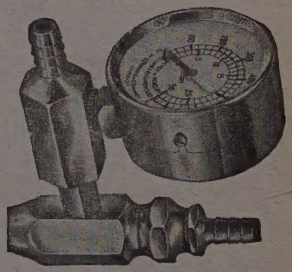

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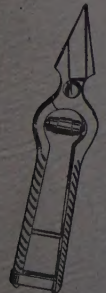

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